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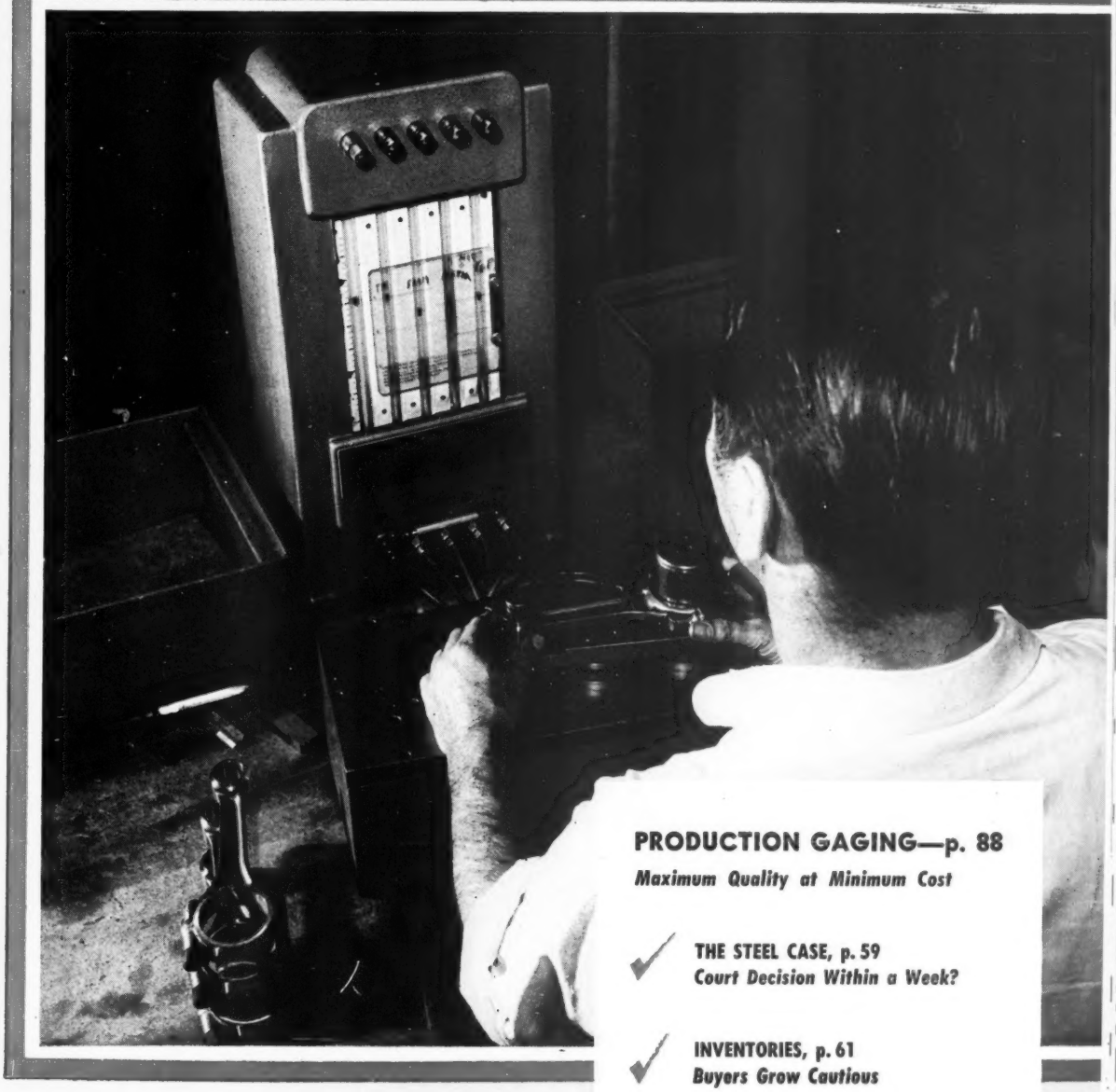
STEEL

THE WEEKLY MAGAZINE OF METALWORKING



PRODUCTION GAGING—p. 88
Maximum Quality at Minimum Cost

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Buyers Grow Cautious

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Machinability Can Be Improved

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That's All the Cleaning an Allis-Chalmers TEFC Motor Ever Needs

MAINTENANCE COSTS ARE LOW for users of Allis-Chalmers Totally-Enclosed, Fan-Cooled Motors. They are easy to clean because even the stickiest dirt can be wiped or blown off without dismantling the motor or even stopping it. They seldom require cleaning because cooling air flows over the *outside* of the motor. There are no external concealed air passages to clog up and cause over-heating. You get better operational continuity, lower maintenance.

Bearings Save Maintenance, Too

Double-shielded ball bearings require no regular maintenance under most normal operating conditions. Yet if difficult service makes re-lubrication desirable, it can be done without dismantling the motor or bearings. Rigid cast iron frame and stiff end brackets maintain bearing alignment . . . assure maximum bearing life.

A-3639

Texrope and Vari-Pitch are Allis-Chalmers Trademarks.

ALLIS-CHALMERS

Get The Full Story Now

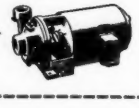
Your Allis-Chalmers Authorized Dealer or District Office can give you complete information on Allis-Chalmers Totally-Enclosed, Fan-Cooled Motors and how they can save you money. Call one of them today or write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 51B7225.

Sold . . Applied . . Serviced . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

***TEXROPE* — Belts in all sizes and sections, standard and *Vari-Pitch* sheaves, speed changers.**



PUMPS — Integral motor and coupled types from ¾ in. to 72 in. discharge and up.

Tool Steel Topics

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

How the Right Steel Solved These 3 Tool Problems

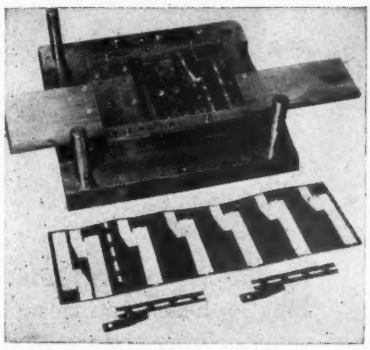
Our metallurgical servicemen and distributors are constantly on the job to help users get the most out of their tool steel. Here are the highlights of some recent tool problems solved by selecting a more suitable steel.

A MAKER OF AUTOMOBILE BUMPERS had been getting poor service from shear blades for trimming hot-rolled spring steel. High-speed steel didn't wear long enough and the cutting edge peened. High-carbon, high-chromium tool steel (our Lehigh H) was tried next. It had plenty of wear-resistance, but the cutting edges developed chipping trouble. **SOLUTION:** Our man suggested Lehigh L (a high-chromium grade with lower carbon). This worked fine — because it had sufficient wear-resistance combined with more toughness.

AN AIRCRAFT FIRM WAS BOTHERED by the cracking of some special wrenches for assembling aircraft parts. The wrenches had very sharp corners, and both thin and thick sections. The application called for plenty of toughness and a fair amount of wear-resistance. The firm had been making these wrenches from a low-carbon type of silico-manganese tool steel, and they were cracking in the water-quenching operation. **SOLUTION:** We recommended Omega. With its less drastic oil-quench and inherent toughness, it has licked the cracking trouble.

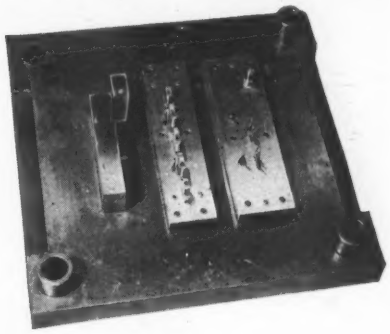
A SHEET-METAL FABRICATOR COMPLAINED to a Bethlehem salesman about the premature breakage of small-diameter punches. Rather long and slender, the punches were used on sheet steel of greater thickness than the punch diameter. (It's usually best for the punch diameter to be greater than the thickness of material being punched.) The punches were subjected to excessive side thrust; constant breakage was running up production costs. **SOLUTION:** They tried 67 Chisel, our chrome-tungsten grade of shock-resisting tool steel. Result: Punches produced about eight times as [illegible] blanks as previously.

Die turns out 500,000 pieces . . . and still going strong



This progressive die, made of BTR, performs a perforating, notching, and blanking operation in the production of condenser brackets. This popular grade of oil-hardening steel was selected by the user because it's easy to heat-treat . . . it has good resistance to distortion in heat-treatment and it's easy to machine.

The long-wearing qualities of BTR are evidenced by the production of more than a half-million pieces at the time the photograph was made. Hardened to Rockwell C-59, it produces about 30,000 parts from 3/32-in. steel strip before redressing is needed.



Our Tool Steel Engineer Says:

Rapid wear is caused usually by improper heat-treatment

When tools fail by wearing too rapidly, the trouble can usually be traced to inadequate heat-treatment resulting in decarburized surfaces, improper quenching that produces low hardness, and other faulty procedures.

However, poor wear-resistance may also result from the use of the wrong type of tool steel. If a blanking die is made of a 0.60 pct carbon steel of the shock-resisting type, it can't be expected to wear as long as a 1.50 pct carbon steel having a high chromium content.

NEW USE FOR HIGH-SPEED STEEL

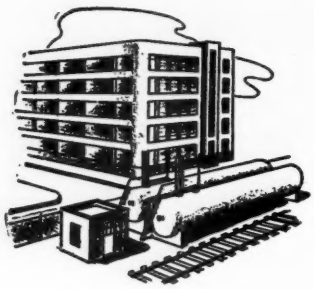
An enterprising apprentice in a tool shop stumbled on a small cache of round steel bars the other day. They were just the right size he needed for a small storage rack the foreman had asked him to build. He made a nice job of it. "This ought to make a hit with the foreman," he thought as the last bar was fitted into place.

When the foreman took one look at the rack, he recoiled in horror. "Oh, no!" he groaned. To the puzzled apprentice the foreman growled, "Young fella, that rack you've got there is worth about ten times the cost of the carbon steel bars it's going to hold. Looks like you've used up every piece of my high-speed steel."

Bethlehem ULTRASONIC TESTED **Tool Steel**

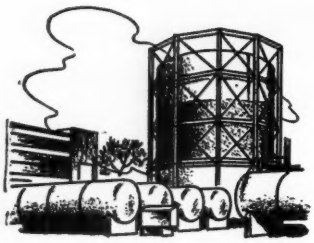
Philgas*

...A Uniform, Clean, Top-Quality LP-Gas



FOR INDUSTRIES

Leading industries use Phillips *66* Philgas successfully for heat treating, mold drying, core baking, ceramic firing and many, many other operations. Automatic Philgas systems assure constant furnace temperatures and atmospheres; constant pressures, high or low.



FOR UTILITIES

Many progressive utilities use Phillips *66* Philgas to augment natural or manufactured gas. High-quality Philgas is uniform in thermal value and gravity, and is free from harmful contaminants. Automatic operation cuts down on overhead.

*Philgas is the Phillips Petroleum Company brand name for its high quality propane-butane LP-Gas or bottled gas.

Phillips 66

PHILLIPS PETROLEUM COMPANY

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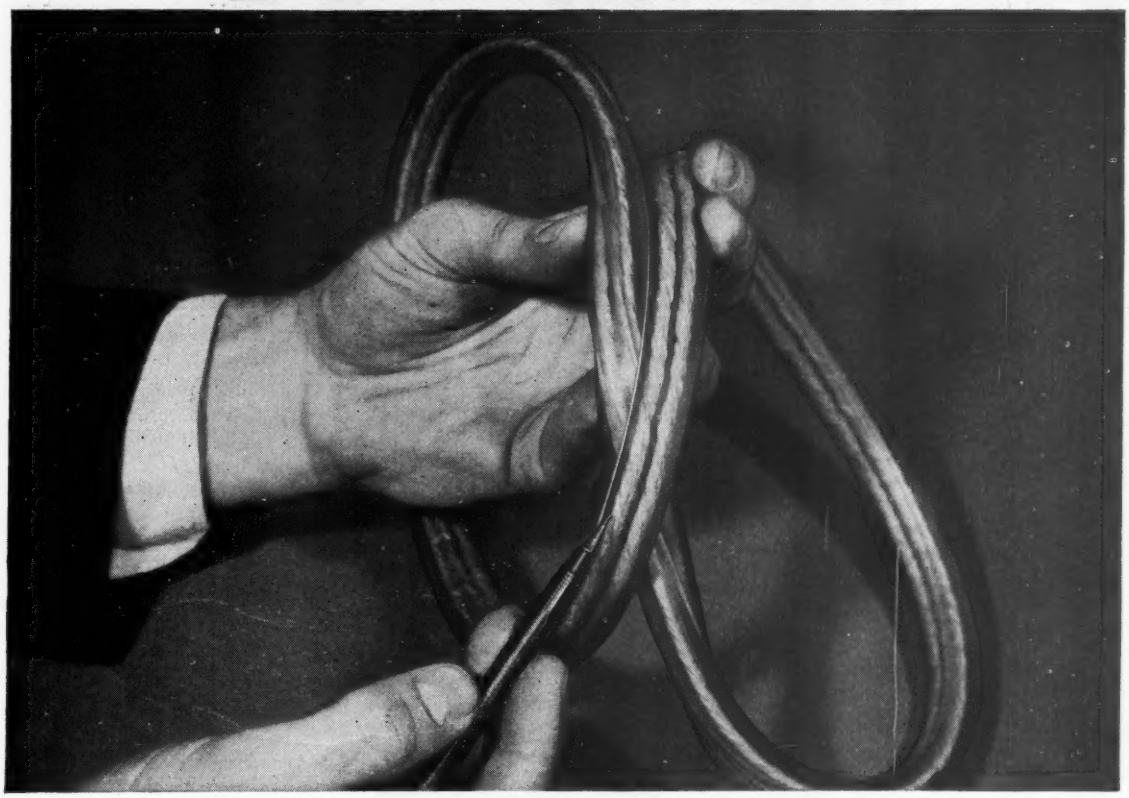
RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER



Now you can see the difference between grommet belts and ordinary V belts

B. F. Goodrich grommet V belts last longer, serve better, save money

THE "X-ray" belt, made of transparent material, was developed just to show you the exclusive B. F. Goodrich grommet construction. Now you can look beneath the surface of a V belt, see for yourself what makes B. F. Goodrich grommet V belts last longer, keep running with fewer interruptions, need less attention.

Note the twin grommets — Each of these grommets is like a giant cable except that it's *endless* — a cord loop built up by winding heavy cord on itself. It has no overlapping ends. Because most of the failures in ordinary V belts occur in the region where cords overlap, the endless cord section in a grommet V belt eliminates such failures.

Concentrated cord strength — All of the cord material in a B. F. Goodrich grommet multiple-V belt is *concentrated* in twin grommets, positioned close to the driving faces of the pulley. No layers of cords to rub against one another and generate heat; cord and adhesion failures are reduced.

Better grip, less slip — Grommet belts have more rubber in relation to belt size. Without any stiff overlap, they're more flexible, grip pulleys better. Size for size, grommet belts give ⅓ more gripping power, pull heavier loads with a higher safety factor. Because there is less slip, there is also less surface wear.

Only B. F. Goodrich has the grommet!—No other multiple-V belt is a grommet V belt (U. S. Patent No. 2,233,294). Now available in C, D and E sections. Your local BFG distributor has an "X-ray" demonstrator belt and will be glad to show it to you. *The B. F. Goodrich Company, Industrial & General Products Division, Akron, Ohio.*

Grommet V Belts BY

B.F.Goodrich

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This Week in Metalworking

STEEL

Vol. 130 No. 19 May 12, 1952

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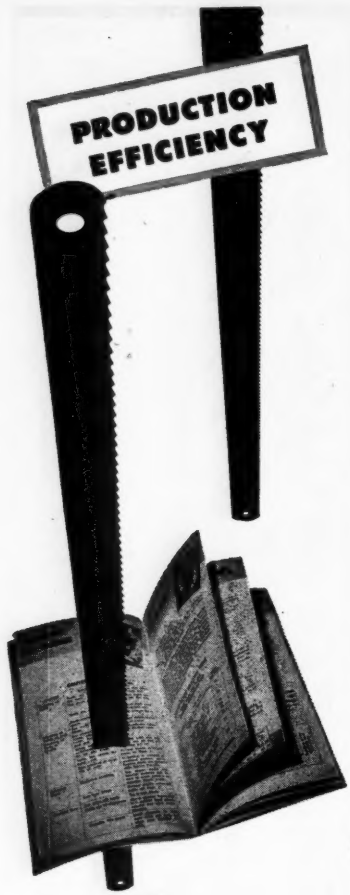

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Here's how to get efficient metal-cutting the *easy* way: Tell your supplier you want VICTOR hand and power hacksaw blades and flexible-back band saws, the brand most people buy.

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Behind the Scenes...

Poetry Corner

We hadn't heard from the poet laureate of this column, Pat Dwyer Jr., for a long time so, we're glad to report that he has just submitted the following lyric:

No wonder that I'm shouting, and thumping on the floor!
No cursed pterodactyl's going to scare us any more.
Indeed, this welcome knowledge makes me buoyant in the head—
I'm relieved to know these creatures are so permanently dead.
It comforts me to ponder that no 'guanador's alive:
'Tis cheering to reflect that those monsters didn't thrive!
There walks no brontosaurus in all the world around;
The last one, God be praised, has been ages under ground.
Sure those ugly warty devils, those great and scaly chumps
Will never mark our earth again with imprints of their rumps.
Beneath their bones I cowered and wondered as I blinked
Why monsters, once so legion, had come to be extinct.
The answer flashed upon me that Nature moved too late:
The creatures grew so ugly they couldn't bear to mate!
It followed, then, in sequence, it was hideous to pair—
They revolted one another, so they couldn't mate to bear.
Because these awful creatures grew too horrified to woo,
Reproduction dropped to zero—but I'm glad—and aren't you?

Back from the Navy

Jay DeEulis is back from a 17-month tour of naval duty. An officer in the Naval Reserve who had two and a half years of service during World War II, Jay was called away from his editorial duties on STEEL late in 1950. He served as communications officer on *USS Eldorado*, the flagship of amphibious forces. He was on the water 12 months altogether, about eight months around Korea. After a year of sea duty, he was transferred to Washington where he served for four months in the Electronics Section of the Bureau of Ships.

Altogether, Lt. Jay spent 17 months on active duty this time and traveled 32,000 miles. The principal compensation for the stint was occasional short leaves, most of which he spent visiting various parts of Japan.

Jay might still be in Korea, but for happenstance. When the Korean peace talks began, the U. N. needed a number of recorders. Jay was one of a number nominated, but his admiral (God Bless Him) said communications officers couldn't go. If Jay had gone, he might still be recording those interminable negotiations.

His favorite comment these days: "Dammed glad to be home."

Cover Story

The photograph gracing this week's cover was taken especially for STEEL at Chrysler Corp.'s DeSoto engine plant. The picture was obtained through the auspices of the advertising agency, Batten, Barton, Durstine & Osborn Inc. (we love that name).

Puzzle Corner

In the ship-and-engine problem of Apr. 28, the ship was 24 years old and the engine 18. First in with that answer were J. H. Rickey of Ironton Fire Brick Co., Carl E. Blass of Talon Inc., Fred C. Salber Jr. of Allentown, Pa., Richard S. Smith of Rigidized Metals Corp., Robert W. Huff of Canton, O., Ralph Pappenheimer of Specialty Device Co., Murray C. Thaw of Littell Steel Co. Inc., George W. Frederick of Republic Steel Corp., T. S. Bean of Barber & Ross Co. and Olga Roberts of Service Iron & Steel Co.

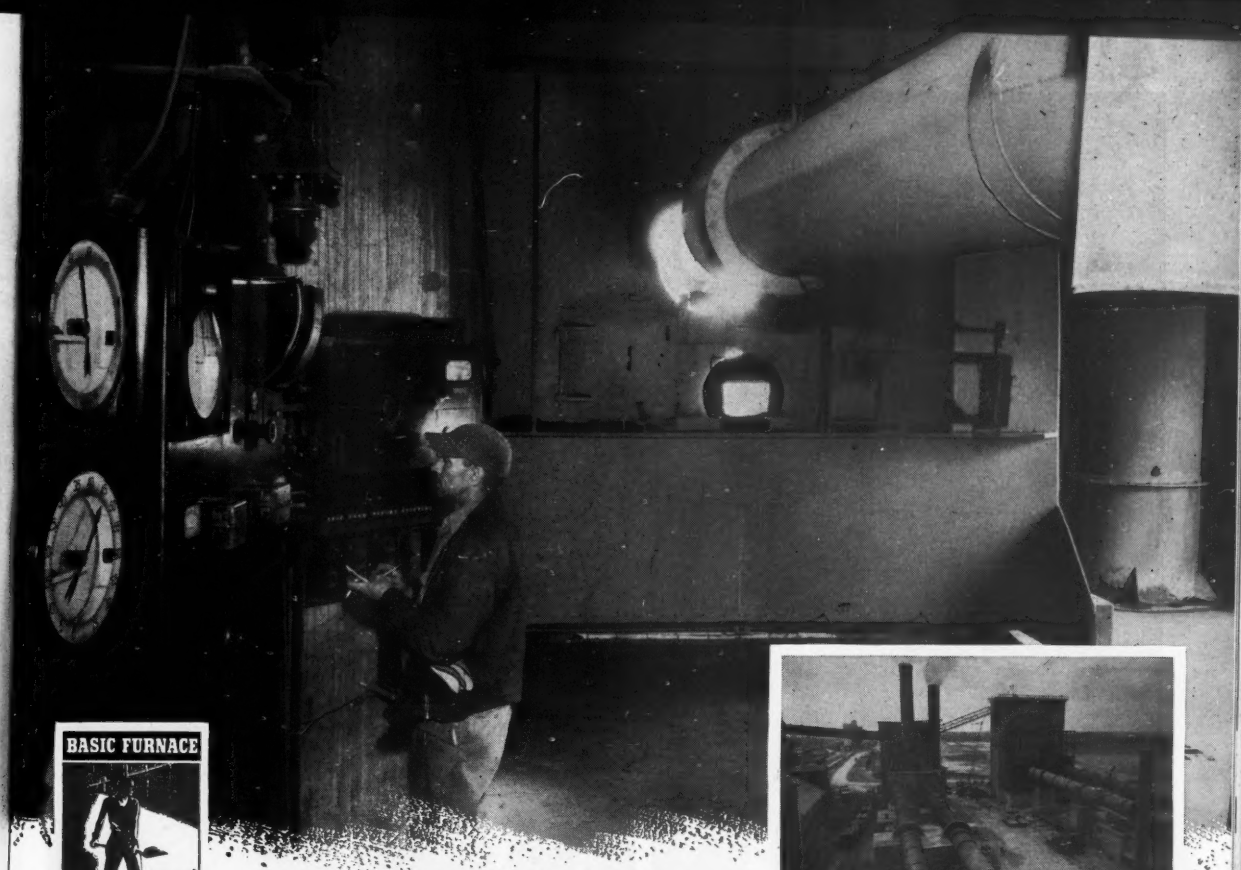
Joseph Braudes of Welding & Mfg. Co. points out that a second answer to the Mar. 24 problem is possible in addition to the one we gave. You'll recall that puzzle concerned a flag pole breaking on top of a firehouse. Mr. Braudes says the pole top may fall 2.256 feet from the back of the station and break 44.317 feet from the base.

Sam D. Groff of Mexico Refractories Co., Mexico, Mo., sends in this problem:

One man can fill a ditch in 9 hours, another in 12 hours, a third in 18 hours. How long will it take all three of them to do it together?

Shrdlu

(Metalworking Outlook—Page 51)



Instrument panel at discharge end of No. 11 rotary kiln at Maple Grove. Automatic control and recording of firing temperatures play an important role in protecting product quality.

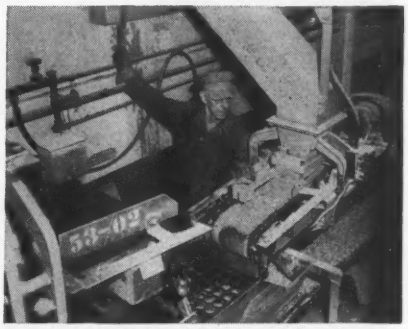
Two new rotary kilns, shown in process of erection at right above, will soon add materially to dead burned dolomite production at the Maple Grove plant.

Done to a turn

Quality in dead burned dolomite is proved in the open hearth furnace. It is measured by refractory cost per ton of steel.

Quality in Basic refractories is established and guarded by materials, machines and men—by expert processing of high grade ores, scientific proportioning and blending of these ores with fluxes, closely controlled burning, careful inspecting and laboratory testing at every stage of production.

No wonder Basic products prove so uniformly dependable, help steel makers reduce refractory costs.



Accurate proportioning of dolomite and fluxes is essential to quality. Here, additives (entering on left) are blended with dolomite, which is traveling via conveyor to the kiln.

Test furnaces in the Basic Research Laboratory at Bettsville, Ohio, keep busy with quality control of refractory production and development of new products.

Basic Refractories Incorporated

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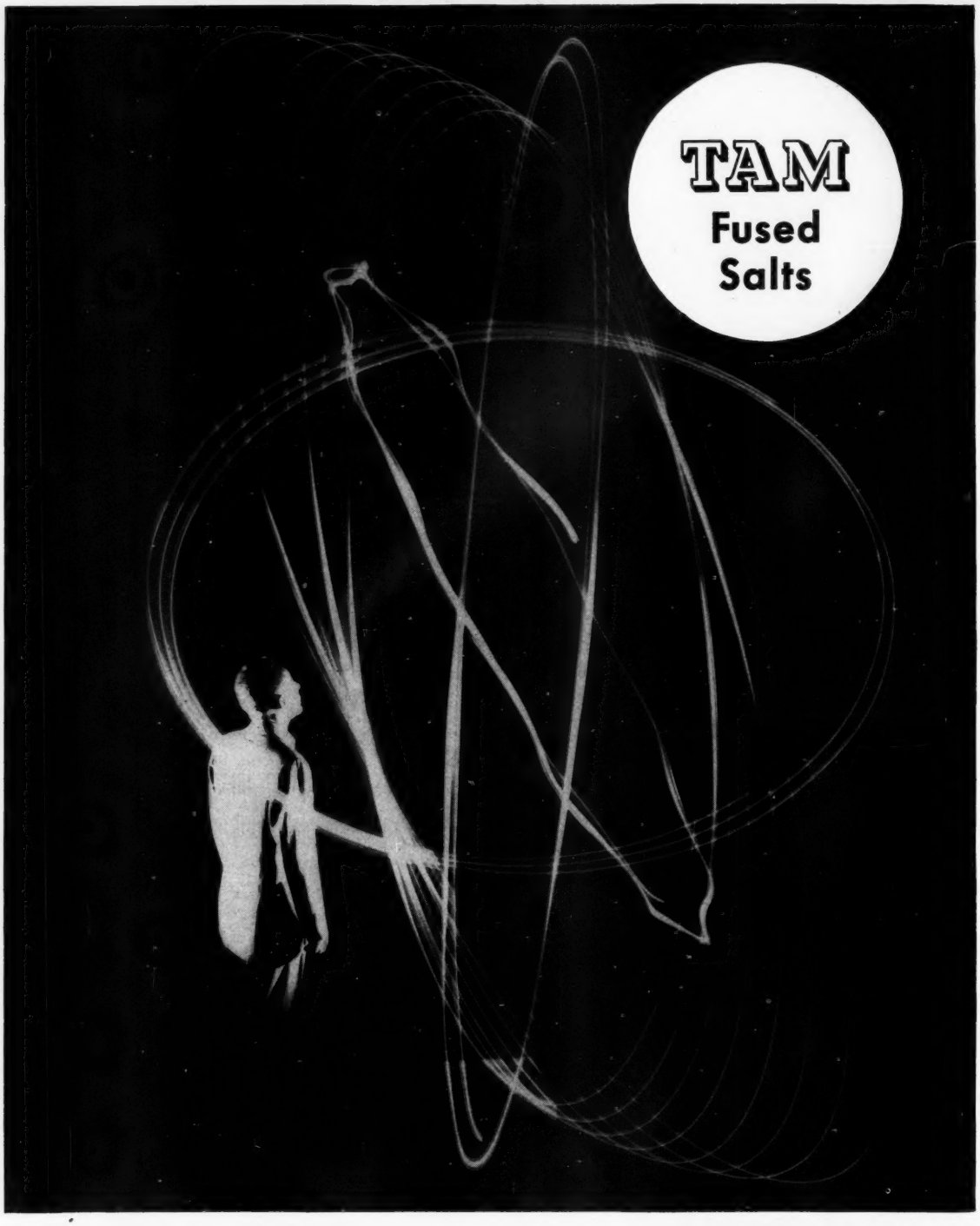

HAVE YOU INVESTIGATED THE ADVANTAGES OF TAM FUSED SALTS RECENTLY?

These TAM products are finding increasingly successful use as a source of zirconium for magnesium alloys. By refining grain size, they help improve strength in castings and eliminate problems in extruding bars. Ask our field engineers for details or write us at New York.

*TAM is a registered trademark.

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LESS THAN 1% REJECTS

by BROACH-RIFLING Gun Barrels!

Less than 1% rejects? Yes . . . considerably less, for in a lot of 17,000 barrels, 20 mm., 72" long, there were *only 5 rejects* when the rifling was done on LAPOINTE BROACHING MACHINES. Everyone can remember that just prior to World War II, when rifling was done on conventional rifling machines, the rate of necessary re-work often ran as high as 80% to 90%!

Now, in addition to the remarkable improvement in quality, there also is a significant production speed-up . . . with LAPOINTE BROACH-RIFLING. Here are some examples:

- In one plant, formerly one man ran two spindles and produced two barrels in 55 minutes. By Lapointe Broach-Rifling, the same man produced **50 per hour.** These were *finished barrels* — no reaming required, as before.
- A 20 mm. barrel was broach-rifled in **three minutes.** Former time, 4½ hours!
- A 37 mm. barrel was broach-rifled in **five minutes.** Former time, 6 hours!

LAPOINTE

Broach-rifling machines are fully described in our Bulletin HP-3.

50 YEARS IN BROACHING ! We're the oldest in the world !
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BROACHING is now the accepted method of rifling. If you contemplate handling such work, it will be to your advantage to consult LAPOINTE engineers. We have had the most experience in building broaching machines, broaching tools, and fixtures.

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AMERICAN CHEMICAL PAINT COMPANY

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Technical Service Data Sheet
Subject: INDEX OF ACP CHEMICALS FOR METAL PRESERVATION AND PAINT PROTECTION

METAL	OPERATION	ACP CHEMICAL
ALUMINUM	*Cleaning*	"DEOXIDINE" "DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Preparation for Painting	"ALODINE" "DURIDINE" "DEOXIDINE"
	Protection from Corrosion	"ALODINE"
BRASS	*Brightening*	"ACP BRIGHT DIP"
	Cleaning	"DEOXIDINE" "DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Cleaning for Painting	"DEOXIDINE" "CUPROTEK
	Corrosion Prevention	"CUPROTEK"
	Soldering Flux	"FLOSOL"
COPPER, BERYLLIUM, AND COPPER ALLOYS	*Brightening*	"ACP BRIGHT DIP"
	Cleaning	"DEOXIDINE" "DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Cleaning for Painting	"DEOXIDINE" "CUPROTEK"
	Coating Steel with Copper	"CUPRODINE"
	Corrosion Prevention	"CUPROTEK"
	Scale Modification	"RIDOXINE"
	Soldering Flux	"FLOSOL"
	Stripping Copper Coatings	"ACP COPPER STRIPPING SOLUTION"
GALVANIZED IRON, ZINC, AND CADMIUM	*Cleaning*	"DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Corrosion Proofing	"ZINODINE"
	Paint Bonding	"ZINODINE"
	Phosphate Coating, in Preparation for Painting	"LITHOFORM"
	Soldering Flux	"FLOSOL"
IRON AND STEEL	*Chromate Coating, in Preparation for Painting*	"CROMODINE"
	Cleaning	"ACP RIDOLINES AND RIDOSOLS"
	Cleaning for Painting	"DEOXIDINE" "DURIDINE"
	Coating with Copper	"CUPRODINE"
	Drawing and Extrusion	"GRANODRAW"
	Paint Bonding	"CROMODINE" "DURIDINE" "GRANODINE" "PERMADINE" "THERMOIL-GRANODINE"
	Paint Stripping	"CAUSTIC SODA AND SOLVENT NO. 3"
	Phosphate Coating, in Preparation for Painting	"DURIDINE" "GRANODINE" "PERMADINE" "THERMOIL-GRANODINE"
	Phosphate Coating, to Protect Friction Surfaces	"THERMOIL-GRANODINE"
	Pickling with Inhibited Acids	"RODINE"
	Rust Prevention for Unpainted Iron	"PEROLINE"
	Rust Proofing	"PERMADINE" "THERMOIL-GRANODINE"
	Rust Removal—Brush, Dip, or Spray	"DEOXIDINE"
	Soldering Flux	"FLOSOL"
MAGNESIUM	*Cleaning*	"DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Pickling	"RODINE (M-200)"
STAINLESS STEEL	*Cleaning*	"DEOXIDINE"
	Coating with Copper	"CUPRODINE"
	Pickle Polishing	"RODINE"
	Soldering Flux	"FLOSOL"

CHEMICALS ACP PROCESSES

WRITE FOR DESCRIPTIVE FOLDERS ON THE ABOVE CHEMICALS AND FOR INFORMATION ON YOUR OWN METAL PROTECTION PROBLEMS

CHEMICALS ACP PROCESSES

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You'll Want This NEW Book!

It tells you how to . . .

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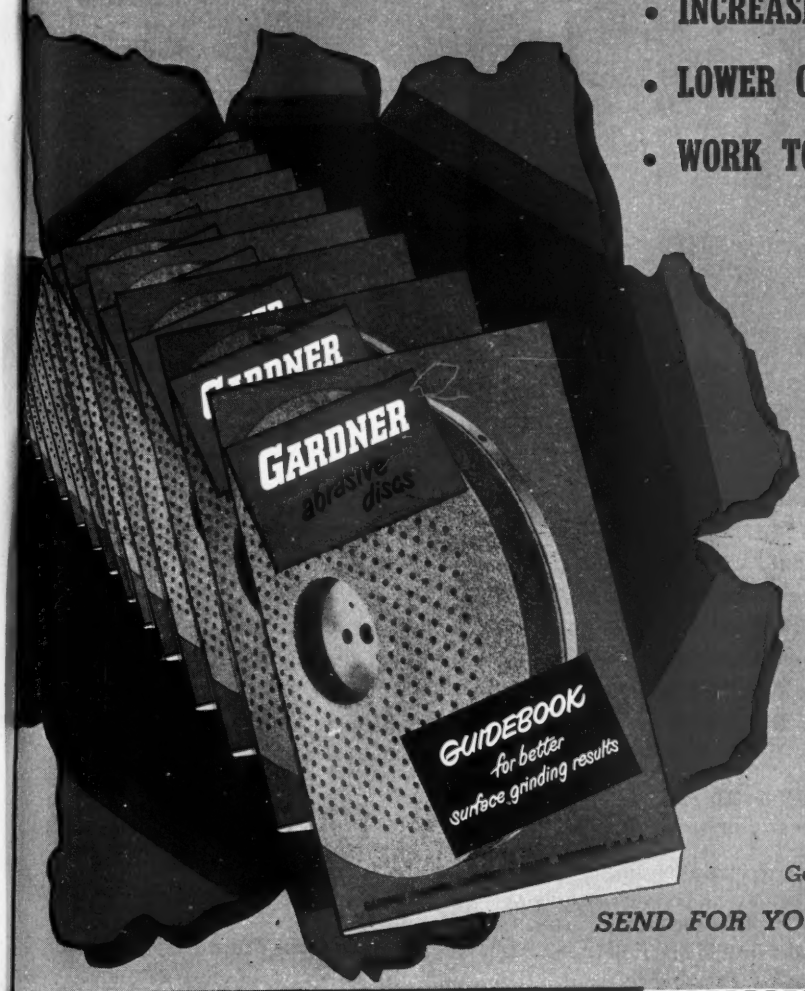

60-page guidebook on selection and use of abrasives for disc grinders

These and other chapters tell you . . .

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THERE is no one cutting fluid that best meets the requirements of every job. Therefore, Stuart offers you a *complete* line of cutting fluids. Often two or three Stuart cutting fluids, or varying dilutions of one or two, will answer all the needs of a shop. But, what a whale of a difference it makes when the cutting fluid that is used is the right one for the job!

GEAR SHAVING TOOL LIFE INCREASED 50%, FINISH IMPROVED WITH STUART'S THREDKUT

In a Chicago plant, two gear shavers were run side by side on the same job, one with the old cutting oil, one with Stuart's THREDKUT. Tool life with "x" oil — 6000 gears; with THREDKUT—*9000 gears!* Finish with the other oil—satisfactory until 2500 to 3000 gears had been produced, then deteriorating until tools were replaced; with THREDKUT—completely satisfactory at all times.

It pays to put the *right* cutting fluid on the job. Ask to have a Stuart sales-engineer call.

Send for NEW BOOKLET entitled
"MORE THAN A COOLANT IS NEEDED"

D.A. Stuart Oil co.
EST. 1865 LIMITED

TIME-TESTED Cutting Fluids and Lubricants

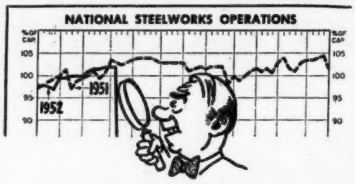
2735-37 S. Troy Street, Chicago 23, Ill.

LETTERS
TO THE EDITORS

Jog Is Justified

Suggest you ask the "boys upstairs" why the end of 1951 and the start of 1952 do not match on the national steelworks operations chart on the Market Outlook page. They should, unless there was a 5 per cent drop at exactly midnite on Dec. 31, 1951.

L. F. Graves
Allis-Chalmers Mfg. Co.
Milwaukee



• *That gap your sharp eye notes in the steelworks chart is legitimate. It resulted from the formality of switching to new capacity figures on Jan. 1, 1952, as is noted in the footnote to the right of the chart.*

Not What It Seems

In your story "Powdered Metals" (Apr. 28, p. 56) you say that metal powders are compacted with dies at pressures up to 70,000 tons. Is this a development that I haven't heard of?

R. D. Beatty
Manner Die Cast Corp.
Cleveland

• *You're up to date, Mr. Beatty.* STEEL's *editors were napping. Pressures of 70,000 psi are about the limit of presses now used for briquetting metal powder parts.*

Engineers Are Needed

The headline, "Gloomy Outlook for Engineers," (Mar. 31, p. 38) is a bit misleading. The outlook for engineers themselves is exceptionally bright. The outlook is gloomy for the industries which are increasingly in the market for engineering personnel.

T. A. Day
Bituminous Coal Institute
Washington

How To Heat Treat

Would you advise where we can get full information on the "Hardenable Pewter" (Feb. 4, p. 87)? We would particularly like to know the method of hardening by heat treatment.

W. Earle Watson, purchasing agent
Reed & Barton
Taunton, Mass.

• *Write to Tin Research Institute Inc., Columbus, O.*

The Jan. 15, 1951 issue of STEEL (p. 37) contained a "Guide for Steel Buyers." If and when you again publish this guide, we would appreciate the listing of our company.

James L. Galbraith
manager of sales
Indiana Steel & Wire Co.
Muncie, Ind.

Sure cure for the "shakes"

UNDER the terrific vibration of aircraft engines, screws and nuts have a tendency to become loose. That's why Army, Navy and Air Corps specifications call for safety wiring on engine mountings, instruments, gun sights, magnetos . . . *every* place on a plane where a screw or nut might shake loose.

By simply drawing the lock wire through a small hole in each nut or screw, and then twisting tightly with pliers, a positive sure cure for the "shakes" is provided.

Wire for this important function must be highly resistant to corrosion, tough enough to resist fracturing under the heat and vibration of aircraft engines, and soft enough to twist with pliers for quick assembly and replacement of parts. Here at National-Standard we've developed a type of slow-annealed stainless steel wire to fully meet these exacting requirements. And we're drawing millions of feet of this wire, not only for aircraft but also for many other automotive applications.

Developing special wire for special purposes has been an important part of National-Standard's business for more than 45 years. Perhaps our unique engineering and manufacturing facilities can help you with your wire and wire fabricating problems.

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NATIONAL-STANDARD Company
NILES, MICHIGAN

DIVISIONS OF NATIONAL-STANDARD CO.

ATHENIA STEEL	*Clifton, N. J.*	**Flat, High Carbon, Cold Rolled Spring Steel**
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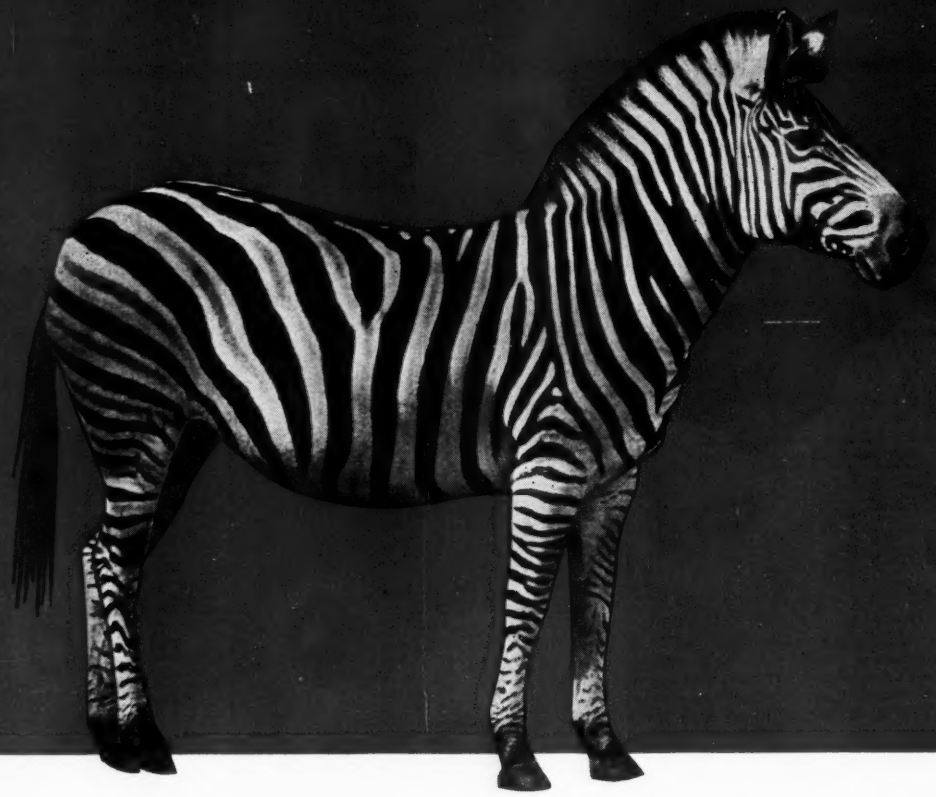
REYNOLDS WIRE	*Dixon, Illinois*	**Industrial Wire Cloth**
WAGNER LITHO MACHINERY	*Jersey City, N. J.*	**Metal Decorating Equipment**
WORCESTER WIRE WORKS	*Worcester, Mass.*	**Round and Shaped Steel Wire, Small Sizes**



● Steel means security! And today, production is greater than ever. To help get every possible ton of open-hearth production the industry has turned to "Zebra" roof construction.

In more than 90% of existing "Zebra" roofs, Grefco's patented RITEX-40 STEELKLAD brick are used in alternate rings with Silica brick in zones of greatest wear. This exclusive unburned chrome-magnesite brick is permanently jacketed in a steel shell which becomes an integral part of the brick.

Results show more heats per campaign, reduced repairs, lower costs. Under severe service conditions, RITEX-40 STEELKLAD has no equal, because the rings protrude beyond, and protect the

Stripes of Superiority

GENERAL REFRACTORIES

GENERAL REFRACTORIES COMPANY
PHILADELPHIA

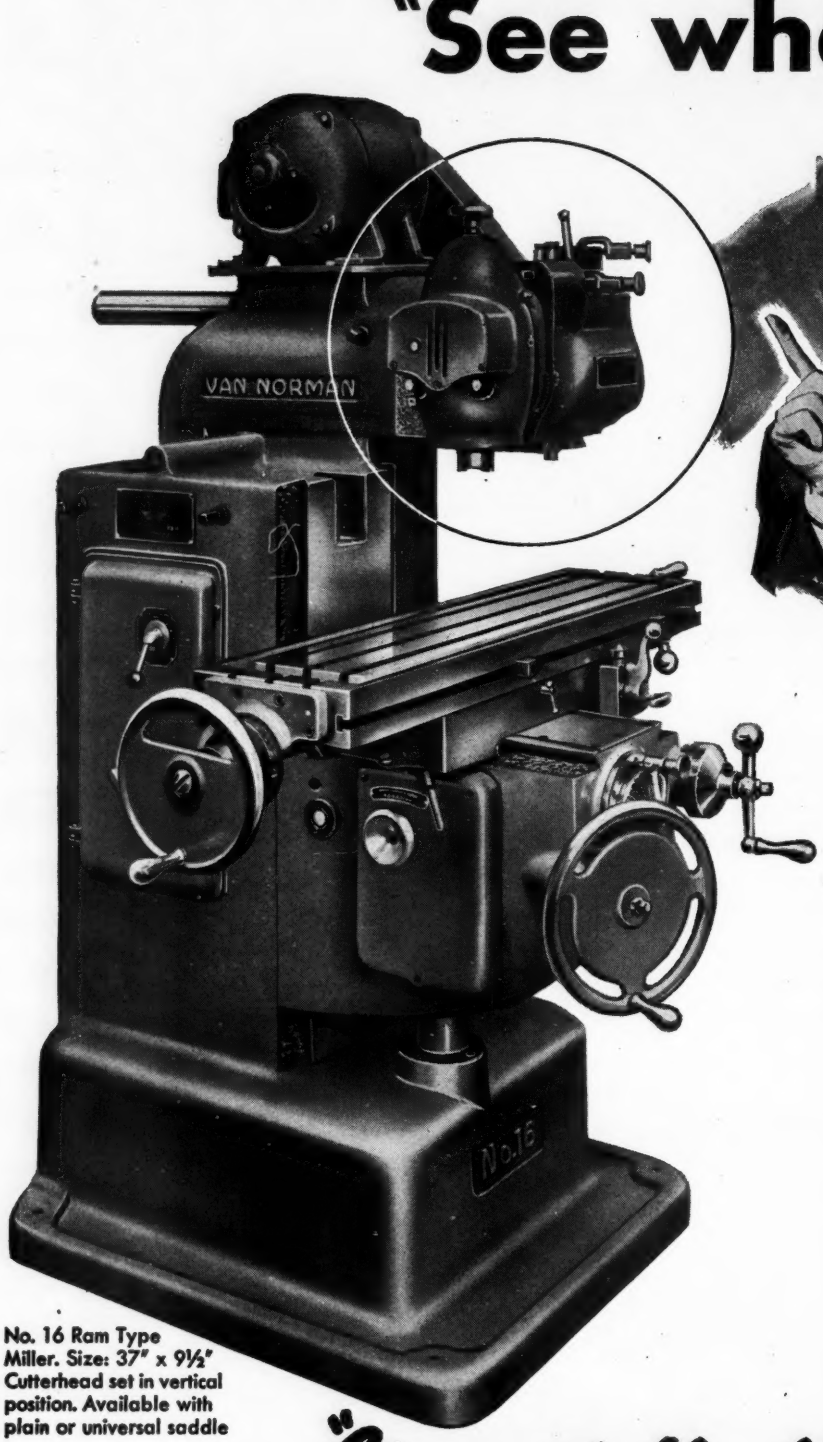
Silica brick from destructive gases. The Silica brick make possible a strong, mechanically stable roof.

In modern open-hearth furnaces you'll also find front and back walls, monkey walls, and furnace ends, of STEELKLAD. Elsewhere in the open-hearth, as well as in other parts of the plant, you'll find Fireclay brick, Silica, High Alumina, Basic brick, and Specialties... all from General Refractories' international string of 43 mines, 23 plants, 18 sales offices and 200 distributing agencies.

Important, too, is Grefco's research laboratory, where better refractories are constantly being developed. In short, General Refractories Company provides you with a Complete Refractories Service!

A Complete
Refractories Service

"See what the A



No. 16 Ram Type Miller. Size: 37" x 9½" Cutterhead set in vertical position. Available with plain or universal saddle

"It pays to Van Normanize"

Adjustable Cutterhead

Can Do For You...

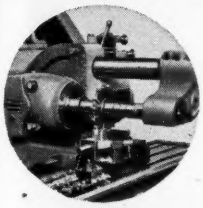
...and you will buy VAN NORMAN Ram Type Millers"

Van Norman Ram Type Millers give you every advantage for reducing milling costs. The adjustable cutterhead, which permits vertical, horizontal or angular milling on one machine, cuts idle machine time by as much as 50%. The movable ram plus the saddle cross feed increases the work range and capacity of these millers . . . enables you to handle larger work pieces with ease.

There is no waiting for single purpose machines because practically all milling operations can be accomplished on one Van Norman Ram Type Miller.

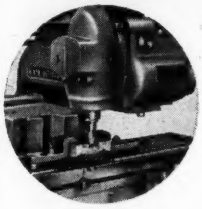
Whether it is for tool room, production line, machine shop, tool and die shop, or laboratory work, Van Norman Ram Type Millers will increase your production and cut costs.

Here's how one Van Norman Ram Type Miller does the work of three single-purpose machines.



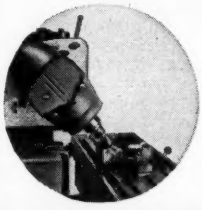
HORIZONTAL MILLING

With the cutterhead locked in horizontal position, the Van Norman Ram Type Miller is used for horizontal milling operation. Hardened stop set at the factory assures positive 0° setting.



VERTICAL MILLING

The illustration above shows the Van Norman Ram Type Miller as it is used for a vertical milling operation. Permanently fixed hardened stop permits easy, accurate positioning of the cutterhead at 90°.



ANGULAR MILLING

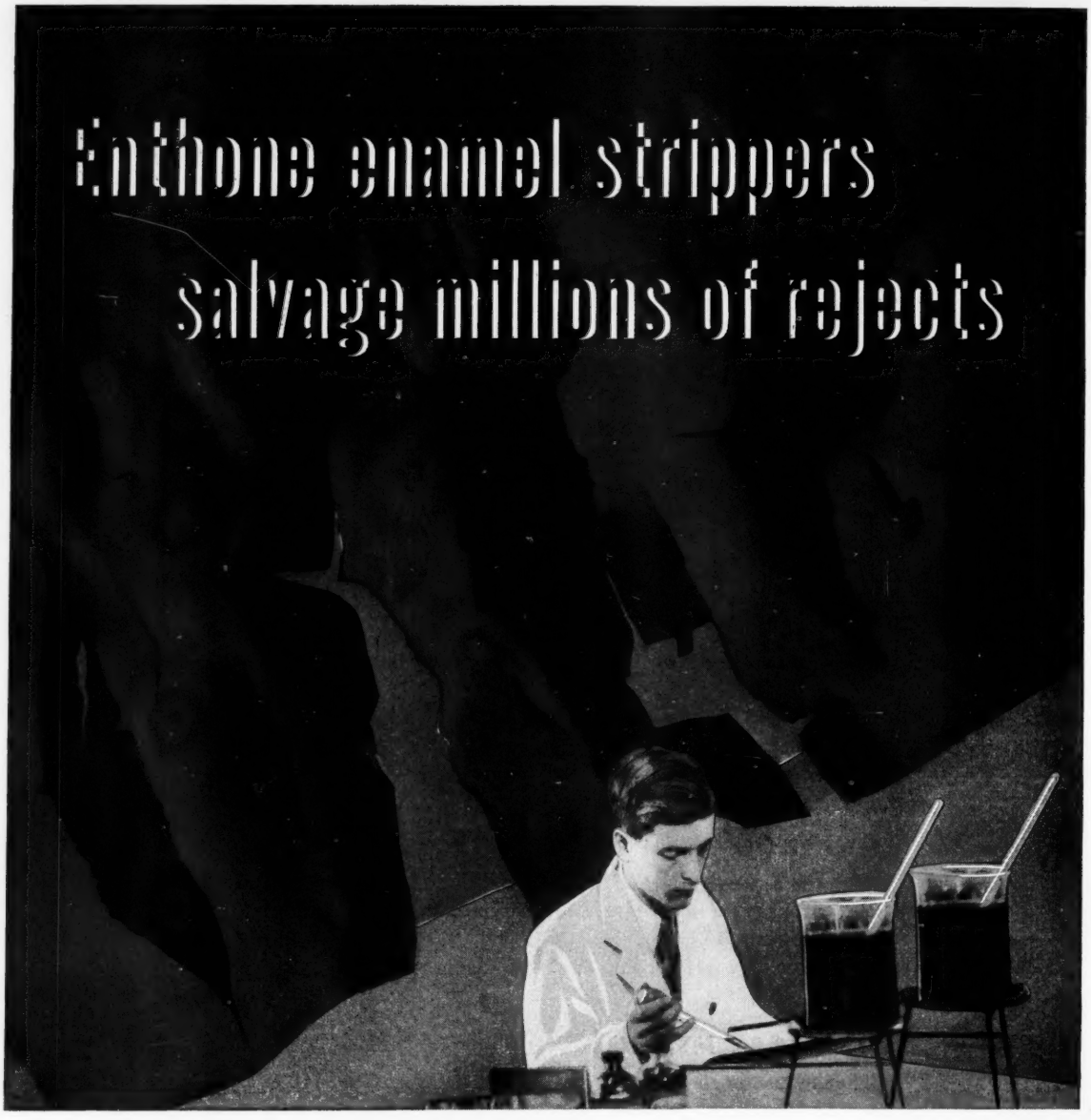
Here the adjustable cutterhead is set at 45° angular milling position. Horizontal, vertical or angular milling. All are easily performed on the Van Norman Ram Type Miller.

Van Norman Ram Type Millers are available in 6 basic models — No. 12, Table: 37½" x 9⅜"; No. 16 Table: 37" x 9½"; No. 22L Table: 45" x 10"; No. 26 Table: 58" x 13"; No. 36 Table: 64" x 14"; No. 38 Table: 64" x 14".

VAN NORMAN COMPANY

SPRINGFIELD 7, MASSACHUSETTS

Enthone enamel strippers salvage millions of rejects



ENAMEL STRIPPERS... Built to Order

Enthone's procedure for selecting scientifically the best stripper for paints, varnishes, lacquers or enamels is simple. You fill out a questionnaire and send it with typical samples of parts to be stripped to New Haven. Here, skilled chemists test the action of many production-proven strippers. If none of these meets the requirements, a new stripper will be developed. Our experience of 15 years in solving stripping problems is at your service.

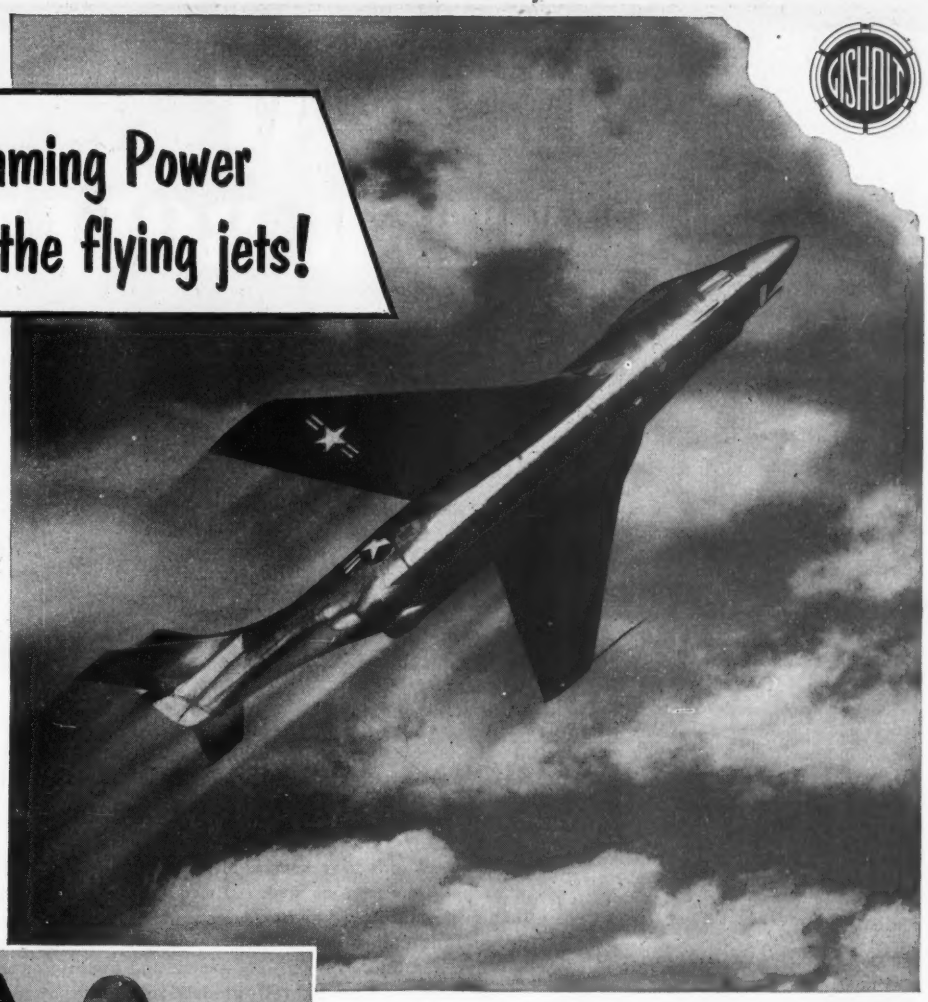
Write for check list . . .

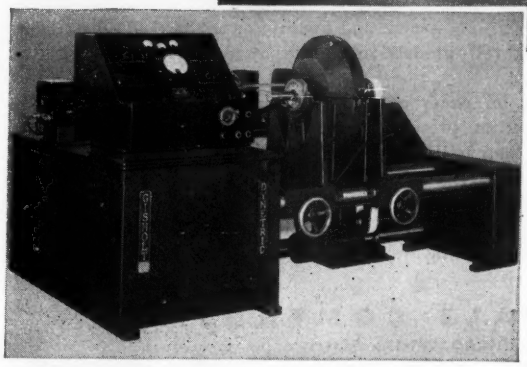
Sixty Products and Processes for Metal Finishing

ENTHONE INCORPORATED

442 Elm Street, New Haven, Conn.

Screaming Power for the flying jets!





DYNETRIC BALANCERS · GISHOLT · DEVELOPED JOINTLY WITH WESTINGHOUSE ELECTRIC CORPORATION "DYNETRIC" IS A TRADE MARK REG. U. S. PAT. OFFICE BY WESTINGHOUSE ELECTRIC CORPORATION

Smoothed by GISHOLT BALANCING

Heart of the jet propulsion engine is the high speed impeller (air compression member) which rotates at speeds above 15,000 r.p.m. The impeller must be free from any trace of unbalance, for at such speeds, the slightest vibration is disastrous.

Gisholt DYNETRIC Balancing Machines do the job so well that these ultra high speed rotors spin with an off-center displacement of less than .000025"! They make such a quick, easy and accurate job of it that they are used almost universally for this work.

In fact, Gisholt DYNETRIC Balancing can be used to balance anything that rotates—from ½ ounce to 50 tons. Freedom from unbalance vibration means greater safety, less wear, better service—and distinctly longer life.

**Write for free booklet "Static & Dynamic Balancing."*

THE GISHOLT ROUND TABLE

represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

GISHOLT MACHINE COMPANY

Madison 10, Wisconsin

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

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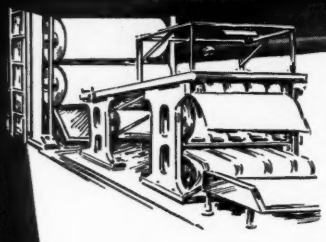

MIDVALE HARDENED AND GROUND FORGED STEEL MILL ROLLS

Pressure Vessels
Forgings and Rings
Hardened and Ground Steel Rolls
Corrosion and Heat Resisting Castings
Ordnance and Armor

Forged steel rolls have been a Midvale specialty for many years, but every new one made is aimed at doing a better job than ever before. Skill and experience of Midvale craftsmen assure rolls built to your most exacting specifications of hardness and finish. Modern equipment and quality control —from furnace to finished roll—produce rolls unsurpassed in quality and performance.

Whatever your needs for heavy equipment in industry Midvale can assure you of precision and performance. Whether it is a roll for your mill . . . roll shells for mining and cement industry . . . pressure vessels for the chemical and petroleum industries . . . rings for turbines and gears . . . or castings and forgings for any industry . . . Midvale can make them to your most exacting specifications.

THE MIDVALE COMPANY
NICETOWN, PHILADELPHIA, PENNA.
OFFICES: NEW YORK • CHICAGO • PITTSBURGH
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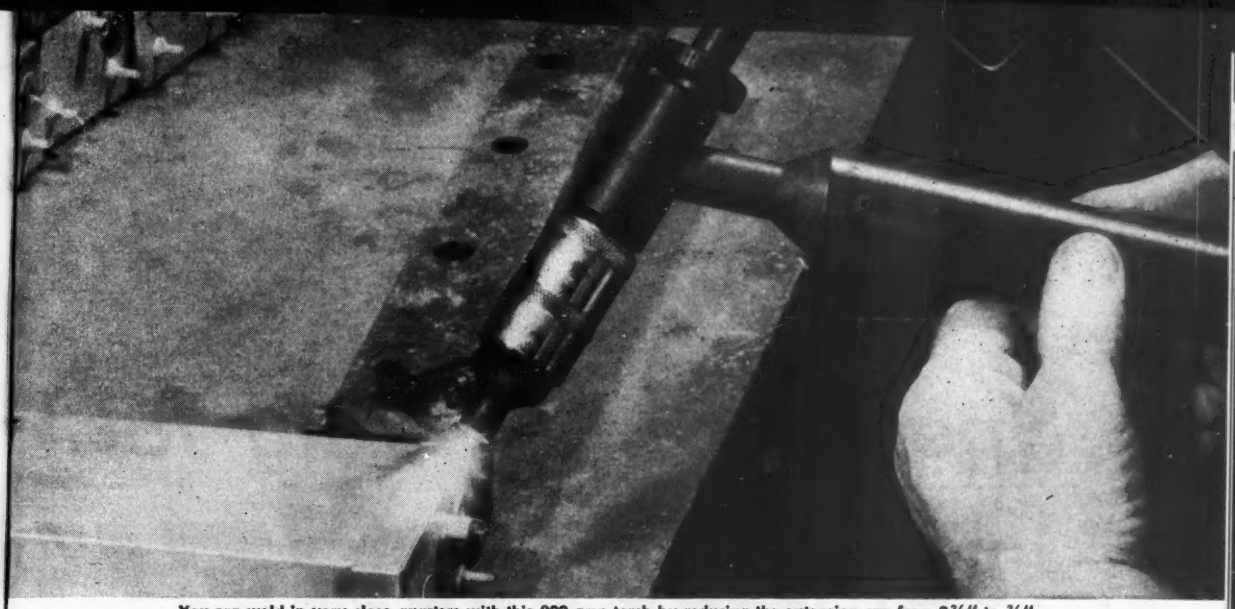
MIDVALE

Custom Steel Makers to Industry

PRODUCERS OF FORGINGS, ROLLS, RINGS, CORROSION AND HEAT RESISTING CASTINGS



You can weld in very close quarters with this 200-amp torch by reducing the extension cap from 3¾" to ¾".

G-E Inert-Arc Torches and Tungsten Reduce Costs, Improve Weld Quality

VERSATILE 200-AMP INERT-ARC TORCH FEATURES EASY, ECONOMICAL OPERATION

Efficient use of gas and ease of operation assure you high-quality welds at lowest cost with the 200-amp G-E Inert-Arc torch.

Whatever your application—stainless, aluminum, fernico, Inconel* or any of the hard-to-weld metals—you'll find this light-weight, easy-to-use torch is cooler operating, lasts longer, and assures maximum tungsten life.

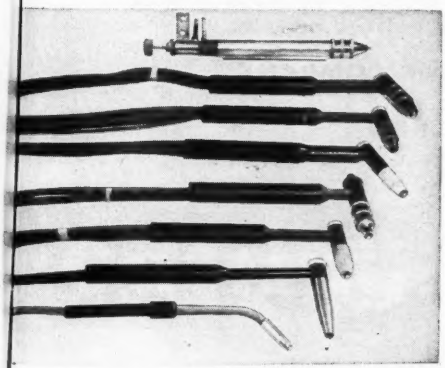
The length of tungsten can be adjusted in a matter of seconds by means of the fingertip control knob. Furthermore, you can reduce stub-end loss to only 1⅛ inches.

When damage to the nozzle occurs, the new nozzle design permits refinishing many times without affecting the orifice size.

Available in a continuous rating of 200 amps, this torch comes equipped with 20-foot cables, enabling you to cover over 1000 square feet of floor area. For cost savings and increased production on your toughest Inert-Arc jobs, try the G-E 200-amp torch!

* Reg. trademark, International Nickel Co.

Hi-Thoria tungsten (right) resists contamination and balling up usually experienced with ordinary tungsten on DC.



You can weld better and faster with one of the eight types of G-E Inert-Arc torches rated 15-800 amps, air- or water-cooled.

G-E TUNGSTEN IS 99.9% PURE, GIVES STABLE ARC, MAXIMUM LIFE

For neat-appearing welds of highest quality, try G-E tungsten on your next Inert-Arc welding job.

Because G-E tungsten is 99.9% pure and has an extremely high melting point, you get a stable arc, clean, uncontaminated welds and maximum tungsten life. G-E tungsten is available in diameters from .040 to ½ inch, and in lengths from 3 to 24 inches.

HI-THORIA GIVES 10 TIMES NORMAL LIFE, WON'T "BALL UP"

Cut welding costs and improve weld quality on your straight-polarity DC Inert-Arc welding by using Hi-Thoria tungsten. Hi-Thoria won't "ball up" on the end. Hi-Thoria resists contamination, thus reducing operator idle time. Hi-Thoria also provides a very stable arc over a wide current range, and actually lasts more than ten times as long as ordinary tungsten!

See your nearest G-E Welding Distributor for a complete line of water- and air-cooled Inert-Arc torches, plain and Hi-Thoria tungsten. He also carries welders, electrodes and accessories to meet all your welding needs. You can find his name by looking for General Electric under "Welding Equipment" in the yellow pages of your telephone directory.

GENERAL ELECTRIC

712-13

"For that Specialized Drilling Job ..."Buy" MORSE!"

There's something special about the way Morse makes even *regular* drills. For example, take a close look at these three special-purpose drills:

A ***MORSE Cotter Pin Drill*** — Made with slightly heavier webs than General Purpose Drills. Able to withstand sudden torque and bending. For drilling sheet metal, cotter pin holes in shafting, and poor quality castings.

B ***MORSE Heavy Duty Drill*** — Made with heavy webs for greater rigidity for use in power-fed equipment. Used in stainless or spring steels, hard cast-iron, monel, and heat-treated metals, near the limit of machinability.

C ***MORSE Redrawn Drill*** — In addition to the drawing or tempering regularly done to all Morse High-Speed Drills, this particular type is given a *redraw* . . . an additional heat treatment which tends to relieve stresses, and lends *extra toughness* to the drill.

But no matter what type of drills you need . . . regular or special-purpose . . . *first* talk it over with your Morse-Franchised Distributor. He has the know-how and the stock to help you get more results from every drill-dollar you spend. *Call him today.*

MORSE TWIST DRILL & MACHINE COMPANY
NEW BEDFORD, MASS.
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Warehouses in New York, Chicago, Detroit, Houston, San Francisco

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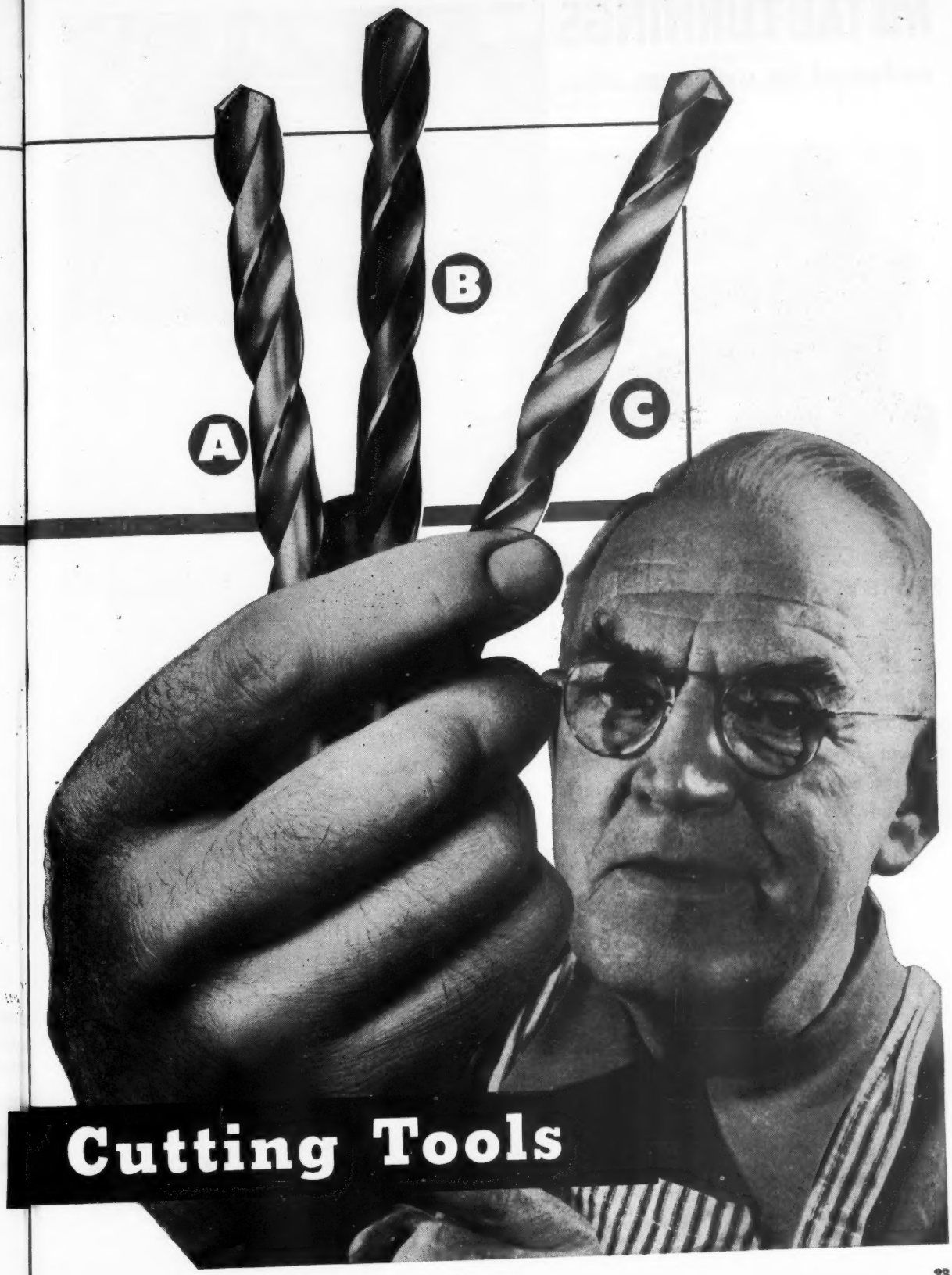
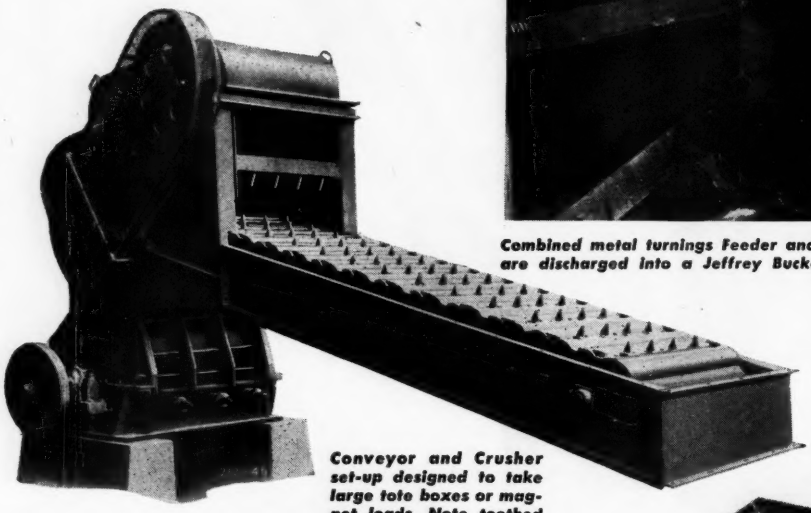


Cutting Tools

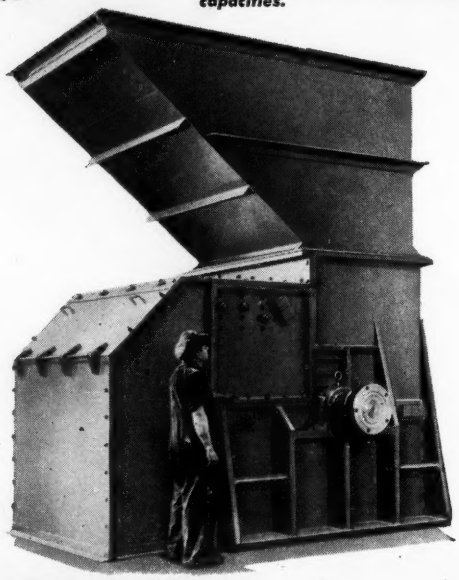
METAL TURNINGS
reduced to uniform size

Combined metal turnings Feeder and Crusher (above). Reduced turnings are discharged into a Jeffrey Bucket Elevator for delivery to storage.



Conveyor and Crusher set-up designed to take large tote boxes or magnet loads. Note toothed surface of conveyor.

Below—Jeffrey Giant Primary Crusher—for use in large scrap processing yards. Magnet or Clam Shell Bucket feed—large capacities.



FED BY HAND, MAGNET OR CLAM SHELL BUCKET

You can dump metal turnings—large tote boxes or magnet loads—onto this Feeder Conveyor. They are carried to a hinged and weighted conveyor at the top, and compressed as they are fed to crusher. Designed for reducing large volumes in automobile plants, steel mills, scrap yards, etc. Uniform feed—uniform size product.

Jeffrey Metal Turnings Crushers (patented) are built in various sizes, capacities, weights, speeds, power . . . with hopper for hand feeding to top or side, or with conveyor (as shown) for the heavier loads. REDUCE your metal turnings. The advantages are many.

THE JEFFREY MANUFACTURING COMPANY

1877 75 YEARS 1952

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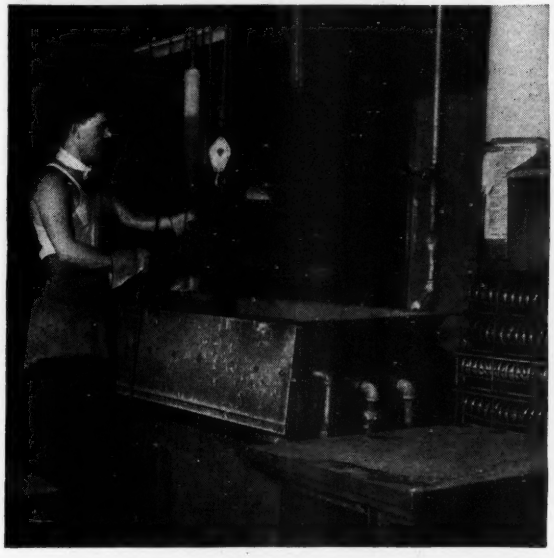
VAPOR DEGREASING *with* "TRICLENE" D
(TRICHLORETHYLENE)

cleans appliance parts in less than a minute!



STOVE BURNER PARTS are thoroughly cleaned at an average rate of 3000 parts/hr. Vapor degreasing with "Triclene" D quickly removes cutting oils, chips and drawing compounds . . . leaves no spots . . . requires no afterdrying.

REFRIGERATOR PARTS are prepared for assembly by vapor degreasing with "Triclene"D. Dust, dirt and oil are removed in one fast step. Equipment is simple to operate, easy to maintain and efficiently re-uses solvent for maximum economy.

FAST, SURE METAL CLEANING at the lowest possible cost is assured by vapor degreasing with Du Pont "Triclene" D Trichlorethylene. Intricate parts of all sizes, shapes and metals are cleaned with the same ease as smooth sections, and can be handled in the same equipment. And wherever speed is essential, "Triclene" D meets top production demands . . . removes the heaviest oils and grease in a matter of seconds. Parts emerge thoroughly clean, warm and dry after vapor degreasing—instantly ready for further processing or assembly.

"TRICLENE" D *is designed* for vapor degreasing by the pioneers of the Trichlorethylene field. In wide use for many years, "Triclene" D is fully backed by Du Pont research plus the practical experience of Du Pont technical representatives.

OUTSTANDING PROPERTIES OF "TRICLENE" D

- Stable
- High Purity
- Rated nonflammable
- Withstands moisture and heat
- Narrow boiling range

DU PONT
first in solvents for
VAPOR DEGREASING

DU PONT
REG. U.S. PAT. OFF.

150th Anniversary

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

MAIL THIS COUPON NOW!

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Dept., Wilmington 98, Delaware

Please send me detailed information on Vapor Degreasing: applications, advantages, equipment used . . . and more facts on Du Pont "Triclene" D. We are interested in cleaning _____ products.

*Name*_____ *Position*_____

*Firm*_____

*Street & No.*_____

*City*_____ *State*_____

instantaneous control

Only P&H AC Welders have this feature

for faster, easier, sounder welds on non-ferrous and "hard-to-weld" metals

No other welder has this Instantaneous Control feature. Foot-operated, the control provides the heat you call for instantly, *electrically* — not mechanically. No time lag. It's a P&H exclusive that boosts production, cuts costs, saves time.

Inert Gas Welding

Instantaneous control lets you handle "hard-to-weld" metals with ease — aluminum, magnesium, brass, copper, stainless, high carbon, high alloy, and low carbon steels. You get sound welds — X-ray quality every time. No burn-throughs, fewer rejections.

Operators like it, too. It gives them faster, better welds in only five simple steps. Check them:

1. Foot switch automatically turns on power, high frequency, water and gas.
2. Arc starts *instantly* without touching work.
3. Foot switch control provides exact heat needed *while* welding — *no time lag.*
4. Foot-operated control cuts power either gradually or instantly at completion of weld. Eliminates craters — no scrap pieces needed to run out bead.
5. Gas and water shut off automatically according to pre-set time delay.

Compare AC Inert Gas Welders, point by point, and you'll buy P&H. Check these outstanding features:

- **P&H Dial-lectric Control** — No moving coils or cores to bind or freeze. Maintenance is absolutely negligible.
- **Built-in high frequency unit** — eliminates additional external equipment. Variable frequency control.
- **Automatic gas and water control** — Pre-set automatic time delay control (2 seconds to 2 minutes) prevents electrode contamination, assures clean, sound welds.
- **Stepless amperage regulation** — from 10 amps to maximum. Three models available — ranges 200, 300 and 500 amps.
- **Unusual arc stability** — Makes good clean welds where extremely low amperages are required.
- **Selector switch** — gives operator instant choice of standard or high frequency unit.

No wonder P&H Inert Gas Welders are the choice of the aircraft industries where top quality work and speed are "musts". They join "hard-to-weld" metals faster and easier — eliminate rejects for you, too. Get full details from your P&H representative or write us for further information.

2426

P&H
WELDING DIVISION
HARNISCHFEGER CORPORATION
4411 WEST NATIONAL AVE. • MILWAUKEE 14, WISCONSIN

POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FABRICATED HOMES

tool steel is our special pride!

Just as mother was known for a special dish, so Crucible stands for the finest in tool steel. For a half-century we have enjoyed this reputation. Naturally, we are proud of it.

We are keeping our research and development in step with industry's everchanging needs for tool steel. We are offering you the benefits of our metallurgical service to solve unusual problems. And we are maintaining full stocks in conveniently-located warehouses so you can get prompt delivery of tool steel.

SEND TODAY for the unique Crucible Tool Steel Selector—a twist of the dial gives the tool steel for your application.

Rex® High Speed Steels
Peerless Hot Work Steels
Halcomb 218
Chro-Mow®
Sanderson Carbon Tool Steels
Ketos®
Airkool Die Steel
Airdi® 150
Nu-Die V Die Casting Steel
CSM 2 Mold Steel
La Belle® Silicon #2
Atha Pneu

SPECIFY YOUR TOOL STEELS BY THESE BRAND NAMES

Crucible Steel Company of America
Dept. S, Chrysler Building, New York 17, N. Y.
Name_____
Company_____ Title_____
Address_____ City_____ State____

9" diameter, 3-colors

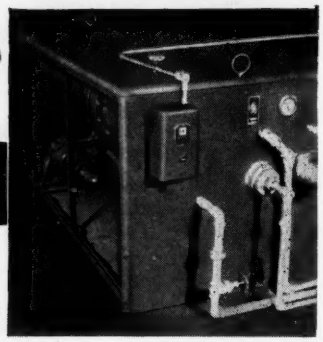
CRUCIBLE first name in special purpose steels

52 years of Fine steelmaking

TOOL STEELS

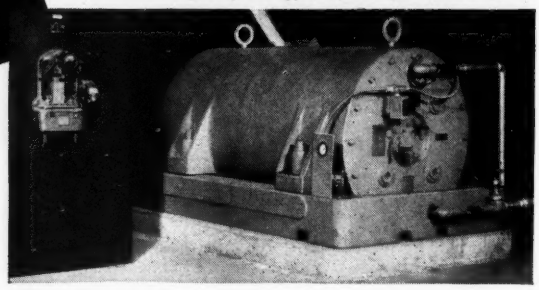
CRUCIBLE STEEL COMPANY OF AMERICA • TOOL STEEL SALES • SYRACUSE, N. Y.

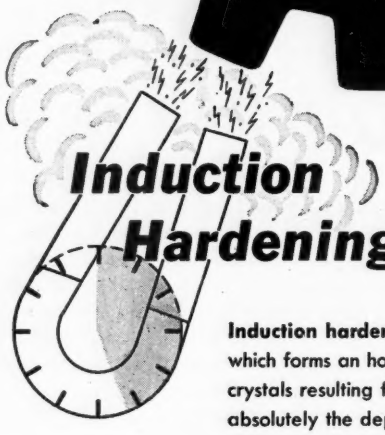
Magnetic field of induction hardening machine concentrates terrific heat on working edges of sprocket tooth, hardening it in only 32 seconds.



Heat exchanger and soft water circulating pump used for quenching.

150 KW motor-generator supplies high frequency energy (10,000 cycles) to inductor.

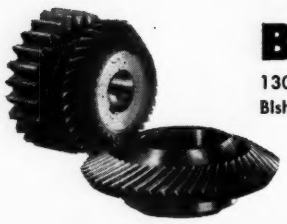




Induction Hardening

Induction hardening is a quick metal heat-treating process which forms an homogeneous, nodular structure free from the usual needle-like crystals resulting from furnace hardening. Induction hardening controls absolutely the depth of penetration and pattern of the hardened surface, retains original ductility of the core, and holds distortion to an infinitesimal degree.

- Unusual equipment—yes. But it enables BRAD FOOTE to produce gears, in its own shop, with the ultimate in wearability.
- Induction hardening is another BRAD FOOTE service in our complete control of quality gear manufacturing. It is further proof that "no one shares our responsibility."



BRAD FOOTE GEAR WORKS, INC.

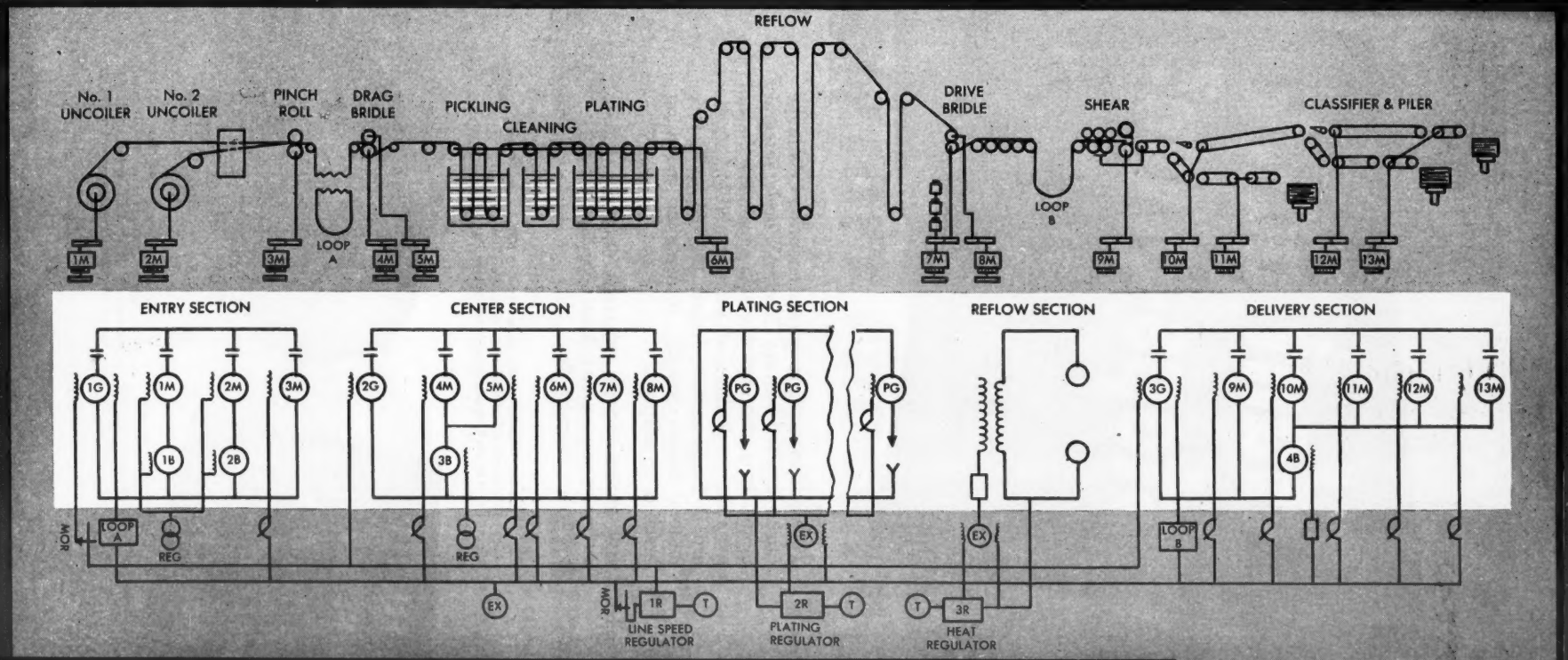
1309 South Cicero Avenue • Cicero 50, Illinois
Bishop 2-1070 • OLympic 2-7700

subsidiaries

AMERICAN GEAR & MFG. CO.
Phone: Lemont 920
Lemont, Illinois

PITTSBURGH GEAR COMPANY
Phone: ATlantic 1-9950
Pittsburgh 22, Pennsylvania

REFLOW



CLARK *Completely Engineered Control for Steel Mill Processing Lines*

The drawing above is a simplified graphic representation of an Electrolytic Tinning Line and Control from coil to sheet. Clark provides extremely accurate control for single, dual or triple looping pits at position A. Loop B can be step type or modulated electronic control. Clark specializes in making electronic loop control.

Speed is selected with No. 1 motor operated rheostat. Regulator (1R) then regulates speed to the pre-set speed of the motor operated rheostat. Regulator (2R) regulates the amount of plating current relative to speed as set by 1 M.O.R., and regulated by 1R, with regulation accuracy of ± ½ of 1%.

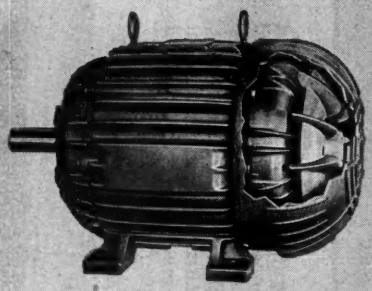
Regulator (3R) regulates amount of heat required for re-flow, and varies with line speed with accuracy of ½ of 1%. All motors including bridle drive, shear, classifier and piler motors are synchronized to run together at pre-set speeds. The entire line can be started and stopped by a single push button.

For all types of Processing Lines, CLARK engineering "know how" provides you with dependable complete control. Consult our nearest district office for details.

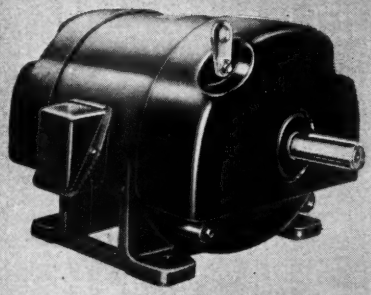
THE CLARK CONTROLLER CO.

ENGINEERED ELECTRICAL CONTROL

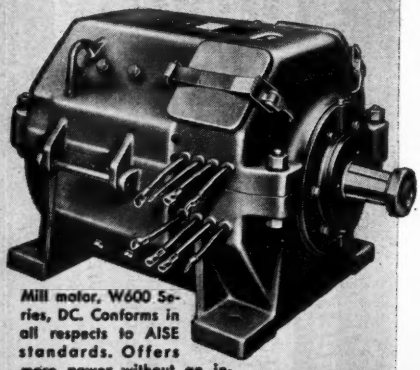
1146 EAST 152ND STREET · CLEVELAND 10, OHIO



"Sealedpower" totally-enclosed squirrel-cage motor. Cooled and cleaned by exterior fan-driven air blast directed along radiating fins. 3 to 125 hp. Explosion-proof, 20 to 125 hp.



Squirrel-cage splash-proof Form BA. Has corrosion-resistant covers which prevent entrance of splashing liquids.



Mill motor, W600 Series, DC. Conforms in all respects to AISE standards. Offers more power without an increase in the frame size.

Want quick stops-often?

here's the brake for it!

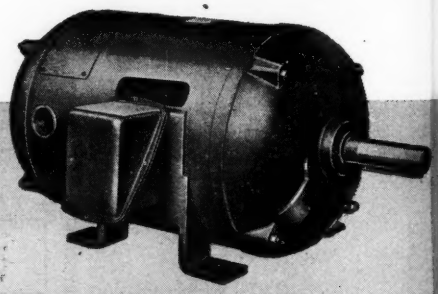
the

The positive-acting, tough and enduring C-W brake can be supplied with any Crocker-Wheeler integral motor. It is also available as a separate unit for mounting on double shaft extension NEMA standard D flange motors, frames 203-326, or C face motors, frames 364-405. It needs no mounting brackets or adapters.

GET BRAKE MOTOR BULLETIN SL-610-1, addressing your request to Elliott Company, Dept. S, Jeannette, Pa.

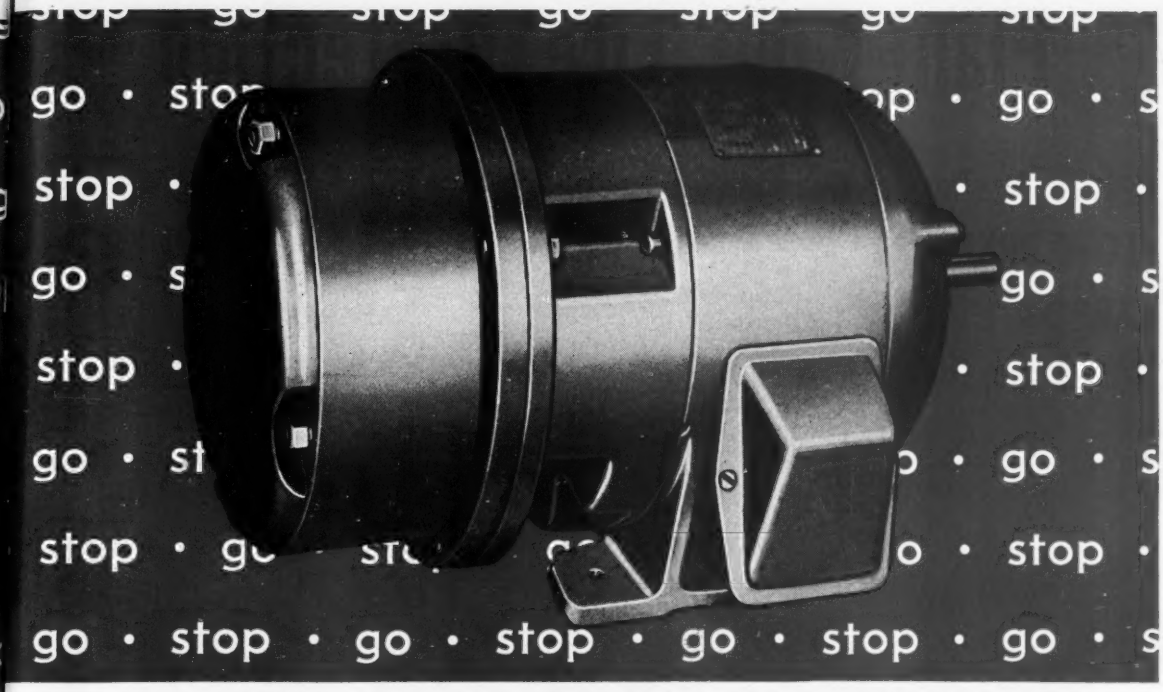
Crocker-Wheeler motors range from 1 to 200 hp. Larger Elliott motors and generators are built by the Ridgway Division at Ridgway, Pa.

...with the ELLIOTT CROCKER-WHEELER complete motor line, you can meet 'most any integral motor need!



Wound-rotor protected type Form BW. For slow, smooth acceleration, high starting torque with low starting current, or variable speed. Drip-proof, splash-proof, 1 to 200 hp.

W2-3



ELLIOTT CROCKER-WHEELER *Brake* MOTOR

The bonded metal brake linings of the C-W brake give greater friction for quicker stops, greater wear resistance, complete immunity to climatic conditions, oil or grease, and long service with no change in retarding torque.

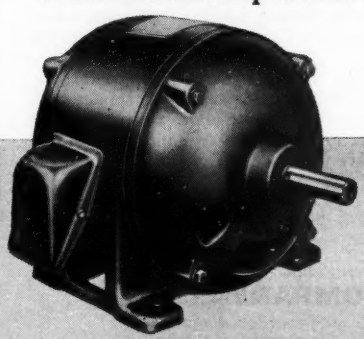
The unusually short overhang of the C-W brake provides maximum rigidity and the compactness that adapts it to limited space — a vital factor on machine drives.

The magnetic action which releases the brake is instantaneous and powerful. The entire mechanism is completely enclosed in an easily removable cover.

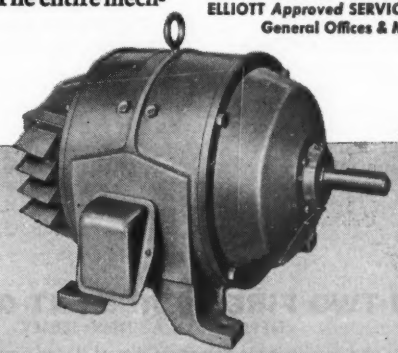
On any Elliott C-W motor, here is a brake of proven quality that you can depend upon to do its job day in and day out with true Crocker-Wheeler reliability.

ELLIOTT COMPANY
Crocker-Wheeler Division
AMPERE, N. J.

BRANCH OFFICES AND REPRESENTATIVES IN PRINCIPAL CITIES
ELLIOTT *Approved* SERVICE SHOPS COVER THE COUNTRY
General Offices & Main Plant — Jeannette, Pa.



Squirrel-cage protected type Form BA. An open drip-proof motor for general purpose use. It is available in wide modifications to meet a variety of conditions.

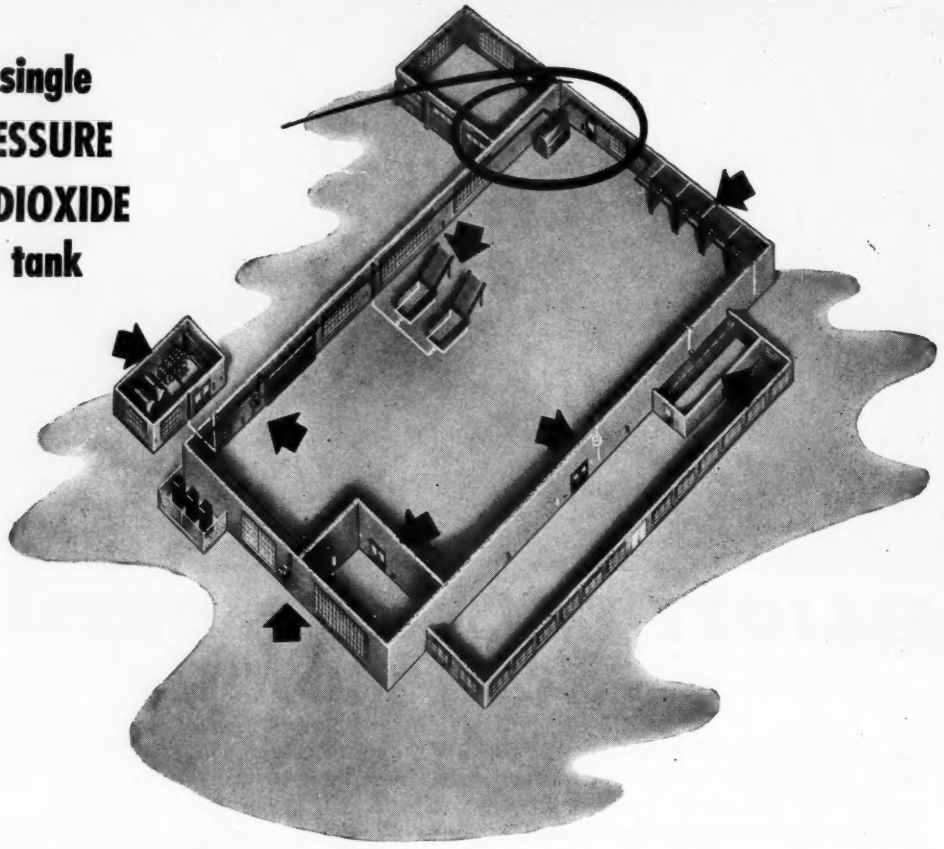


DC drip-proof and drip-proof-protected types. Form F, in ratings to 7½ hp. Form H, in 10 to 200 hp.

Squirrel-cage, totally-enclosed, non-ventilated Form BE. Available up to and including 3 hp at 1800 rpm, for applications requiring protection against dust, fumes, moisture and similar conditions.

Plant-Wide Fire Protection

from a single LOW PRESSURE CARBON DIOXIDE storage tank



Now, your larger size fire hazards can be protected more efficiently at less cost, thanks to C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing Systems. Simple piping, running from one centrally located storage tank, instantly transports clean, non-damaging, non-conducting carbon dioxide anywhere in the plant area . . . to flammable liquids, electrical equipment, storage spaces, manufacturing processes and record vaults. Fire at any protected location is extinguished in seconds with an absolute minimum of expense and interruption.

Flexibility is the keynote of these new type C-O-TWO Fire Extinguishing Systems . . . the low pressure carbon dioxide storage tanks range in capacities from one to fifty tons . . . discharge facilities can either be manual mechanical, manual electric, automatic mechanical, automatic electric or a combination of these . . . especially installed to fit your particular needs. Future plant expansion is easily and economically provided for by initially installing an oversized low pressure carbon dioxide storage tank and adding the supplementary discharge facilities at a later date.

C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing Systems are built with the same superior design and high quality workmanship that have characterized C-O-TWO High Pressure Carbon Dioxide Type Fire Extinguishing Systems for many years. Whether it's fire detecting or fire extinguishing . . . portables or built-in systems . . . C-O-TWO means experienced engineering that assures you of the best type equipment for the particular fire hazard concerned.

So, with current expensive delayed replacements, why not let an expert C-O-TWO Fire Protection Engineer help you now in planning fully approved fire protection facilities for your various properties. Complete free information and descriptive literature are yours for the asking. Get the facts!

TRADE MARK C-O-TWO REG. U.S. PAT. OFF.

C-O-TWO FIRE EQUIPMENT COMPANY
NEWARK 1 • NEW JERSEY
Sales and Service in the Principal Cities of United States and Canada
Affiliated with Pyrene Manufacturing Company

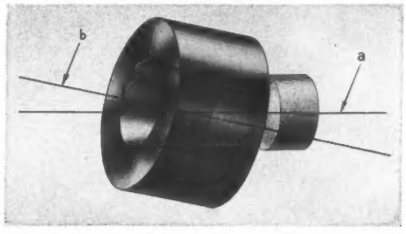
MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeez-Grip Carbon Dioxide Type Fire Extinguishers • Dry Chemical Type Fire Extinguishers • Built-In Smoke and Heat Fire Detecting Systems
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems

What's in Vermont this month?

Bell mouth holes are a common internal grinding error. General available information advises simply turning the workhead or changing the length of traverse to correct this error, to generate a straight hole. In the case illustrated, where bell mouth exists on both ends of the hole, neither turning the workhead nor changing the length of stroke will correct the error. In the illustration, the work axis "b" is tipped out of alignment with wheel and wheel path axis "a". When the wheel, moving on axis "a", traverses the front of the hole, it grinds above the work center line and the front of the hole will be oversize. As the wheel traverses the center of the hole, the hole will be to size. As the wheel traverses the back of the hole, it grinds below the center line and the hole will again be oversize. While the wheel contact may be a full line, it will not be parallel to the axis of the work.

The only possible remedy is to correct the alignment of the workhead axis "b" so that it will be parallel with the wheel and wheel path axis "a". Wheel wear will be uniform and finish will be improved. Most important, the geometry of the hole will be correct.

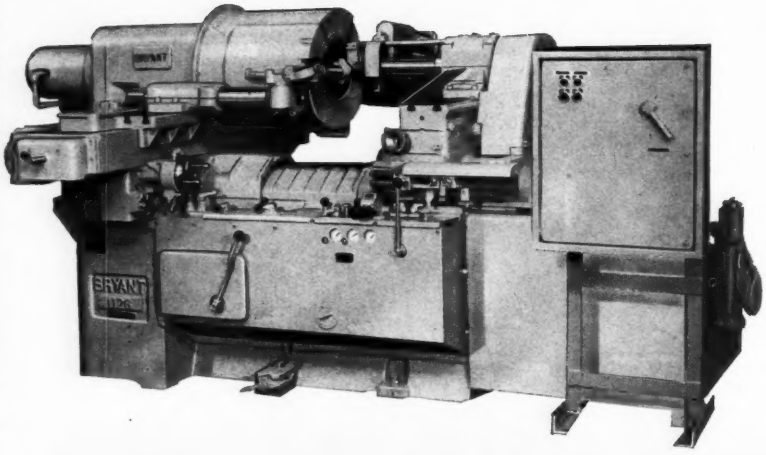


Bryant internal grinders are engineered to permit adjustment which will bring the workhead into proper alignment.

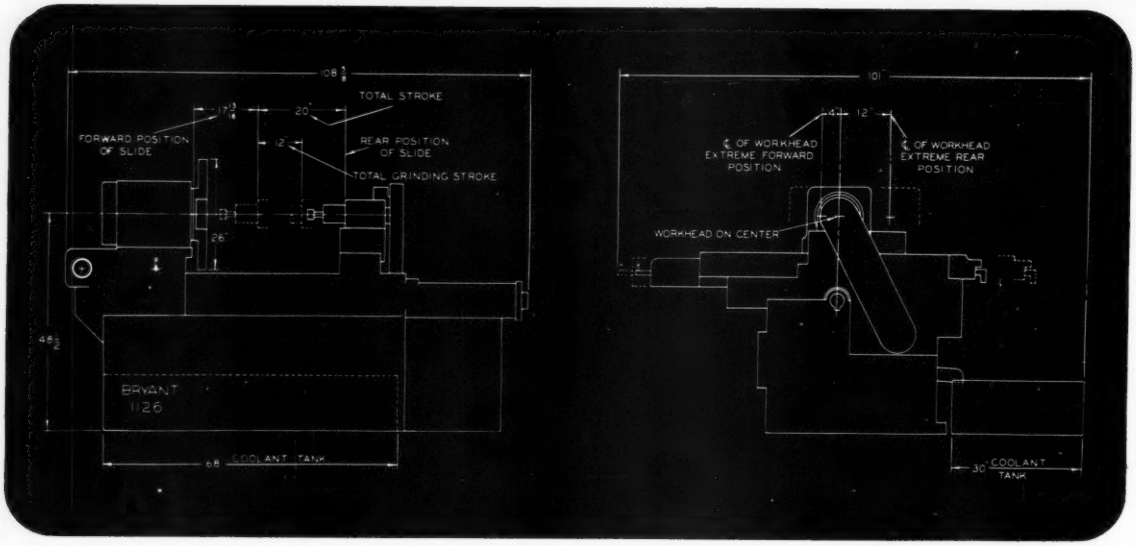
Bryant Chucking Grinder Company in Springfield, Vermont, U.S.A.

FOR HOLE GRINDING

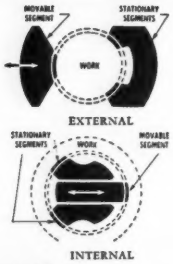
The Bryant 1126 Precision Hole Grinder



This heavy-duty, semiautomatic machine, with hydraulic controls, has a 26″ swing and will grind holes with a maximum depth of 12″. Although designed for large, heavy work, a selection of wheelheads is available to grind holes as small as 1″ in diameter. The extremely rugged bed provides the strength and rigidity necessary for vibrationless operation. The workhead has two positions, one for grinding and a forward position for ease in loading and checking large work. The wheelhead is adjustable to grind work up to 15° included angle. The Bryant workhead and wheelhead slides are antifriction to provide extremely accurate grinding and sensitive control. Write for new illustrated folder.

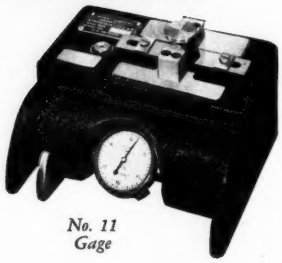


FOR QUANTITATIVE READING OF THREAD FIT



The Bryant Thread Gage

The Bryant Thread Gage gives one accumulated reading, on a dial indicator, of P.D., form and lead — a definite indication of assemble-ability! Drawings at left show the Bryant principle of an "expanding" master plug for checking internal parts, and a "contracting" master ring for checking external threads. The threaded part is dropped between (or over) the segments; operating lever is released; segment contact is made on all the threads; a partial turn of the part inspects the thread all over. *The Bryant gage is 4 to 5 times faster than plug or ring gaging!* Write for folder.



No. 11 Gage

Bryant Chucking Grinder Company in Springfield, Vermont, U.S.A.

HOW TO MAKE A SOCKET-WRENCH

Wrench better

The steel shell of a mechanic's socket wrench has a tough job. The wall must be thin to slip over nuts in tight spots, the wrench must be strong and tough to keep its grip on the nut once the wrenching starts. The wrenches made by Herbrand have a reputation among mechanics for getting into close quarters and doing the job without slipping or giving.

Here's how Herbrand metallurgists and designers used Republic Steel 3-Dimension Metallurgical Service to pick the best Republic Alloy Steel to do the job . . .

Improvements in machinability on high-speed automatic machines were important . . . better hardenability of the finished wrench sockets was required . . . and production costs had to be kept down.

Herbrand metallurgists called in the Republic Field Metallurgist. Told him their problem. He went into a huddle with the other two members of the Republic 3-Dimension Metallurgical team . . . the Mill Metallurgist and the Laboratory Metallurgist.

The answer was soon ready . . . the recommendation of a certain one of the many grades of Republic Alloy Steels that would give Herbrand the desired machining and heat-treating characteristics, every time, lot-after-lot, at the necessary low cost.

You, too, can achieve quality improvements like this in your products . . . a call will bring the Republic Field Metallurgist into your picture.

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

LAB FIELD MILL
3-DIMENSION Metallurgical Service

. . . combines the extensive experience and coordinated abilities of Republic's *Field, Mill* and *Laboratory* Metallurgists with the knowledge and skills of your own engineers. It has helped guide users of Alloy Steels in countless industries to the correct steel and its most efficient usage, IT CAN DO THE SAME FOR YOU.

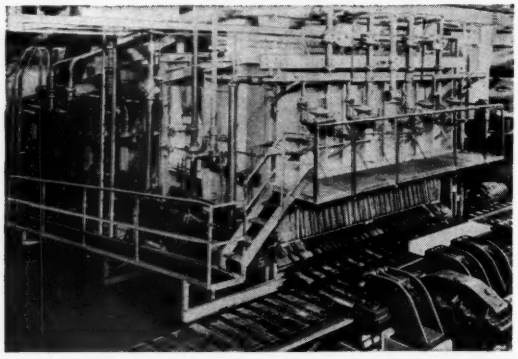
Republic COLD DRAWN
REPUBLIC STEEL
ALLOY STEEL BARS

GAS... the Modern Fuel for all Industry

for example:

in PRECISE TEMPERATURE CONTROL

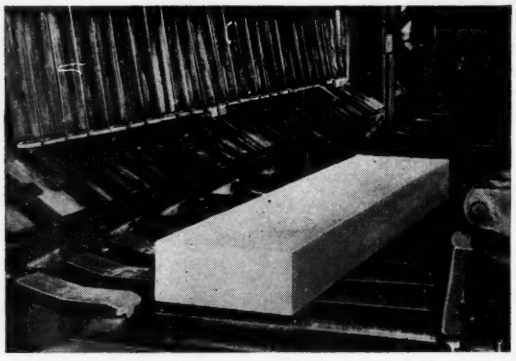
at AMERICAN BRASS COMPANY, *Buffalo, New York*



Brass cake furnace, designed and built by W. S. Rockwell Co., Fairfield, Conn., can heat up to 40,000 lb. of brass per hour, in continuous operation at American Brass Co.

PRECISE TEMPERATURE CONTROL is a prime factor in the production of brass strip, and GAS is the fuel that provides this precise control for American Brass Company.

In American Brass Company's large heating furnace, brass cakes weighing up to 3200 lbs are heated to 1300-1500° F for hot rolling reduction to slabs less than ½" thick and up to 85' long.



Headed for the hot rolling reversing mill, this Gas-heated brass cake is discharged from the Gas-fired heating furnace.

Along the side walls and ends of the furnace, GAS burners fire over the brass cakes as they pass through the inclined hearth chamber. Two-zone temperature control provides the cross-firing effect needed for steady, uniform heating of the cakes, which move through the chamber in two or four rows.

In a furnace processing 20 tons of brass per hour in continuous cycle operation, GAS meets these important processing requirements:

- **Precise temperatures and**
- **Ease of automatic temperature control**

GAS is Industry's Modern Fuel because GAS is versatile enough to fit into *your* production line, and because GAS affords automatic and precise temperature control. Get the facts from your Gas Company Representative, today.

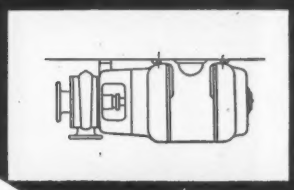
MORE AND MORE THE TREND IS TO GAS FOR INDUSTRIAL PROCESSING

AMERICAN GAS ASSOCIATION

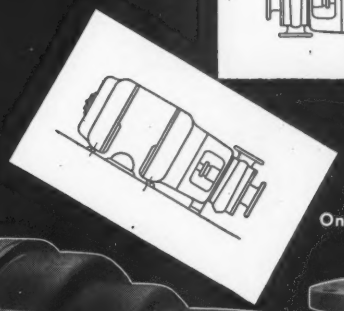
420 Lexington Avenue, New York 17, New York

SQUEEZED FOR SPACE?

Fits anywhere —any way



Upside down



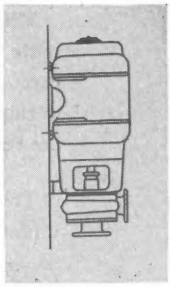
On an angle

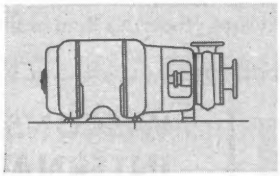
If plant expansion pains have you squeezed for floor space, Fairbanks-Morse *Builtogether* Centrifugal Pumps can help solve your problems.

These compact, efficient pumps can be mounted horizontally, vertically, or on an angle . . . on the floor or from the ceiling. Backed by the Fairbanks-Morse reputation for quality, these pumps will always deliver outstandingly dependable performance. An important extra advantage to you is the fact that both motor and pump are built by Fairbanks-Morse . . . your assurance of efficient service.

Fairbanks-Morse Builtogether Pumps are available in both single and two-stage models . . . in capacities up to 1000 gallons per minute against heads up to 550 feet. For complete information, see your local Fairbanks-Morse Branch, or write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

Vertically





Horizontally

Angled upside down

FAIRBANKS-MORSE,

a name worth remembering

PUMPS • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • SCALES
HOME WATER SERVICE EQUIPMENT • RAIL CARS • FARM MACHINERY • MAGNETOS

Wisconsin Sulfite-Treated Steel

Sulfite-Treated Steel, a highly machinable steel, is produced by a Wisconsin-developed process.

This steel undergoes a "washing" action in the ladle, to add sulphides, uniformly dispersed throughout the metal—aiding the machinability of this steel. At the same time, abrasive elements are removed.

This Sulfite-Process produces a steel with more uniform physical properties than ordinary resulphurized steel. That means fewer rejections and a better finished product. Most important of all, Wisconsin Sulfite-Treated Steel is *far more machinable* than ordinary steel with a *minimum effect on physical properties.*

These steels and Wisconsin's alloy steels are designed for your specific requirements. We also have complete facilities for annealing, heat-treating and cold drawing. Consult our sales and metallurgical staffs for complete information.

INTERNATIONAL HARVESTER

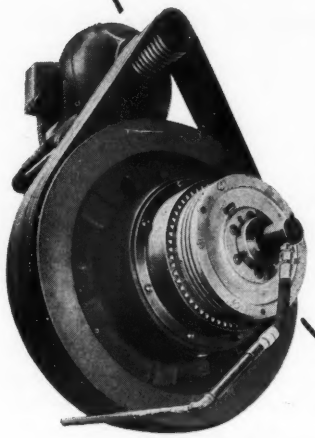
WISCONSIN STEEL COMPANY, affiliate of INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue, Chicago 1, Illinois

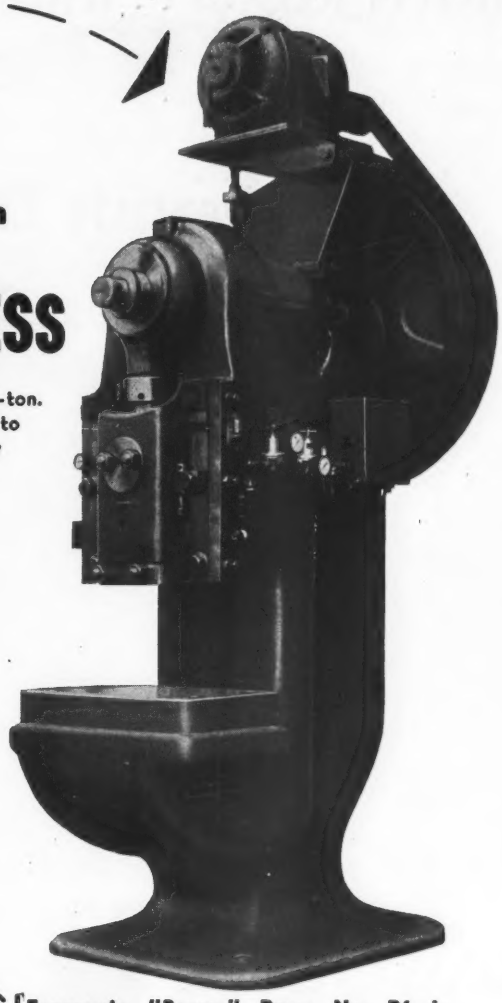
WISCONSIN STEEL

P for Prompt
P for Power
P for Production

FERRACUTE 'P' PRESS

Ferracute Press No. P6 100-ton. Other sizes from 20-tons to 150-tons. Prompt delivery on all models.





Ferracute "Power" Press No. P6 is equipped with air-operated, electrically-controlled FRICTION CLUTCH. Adjustable to continuous or single-stroke operation. Friction Clutches are available on all sizes.

Write or wire for full details of the complete line of Ferracute P presses.

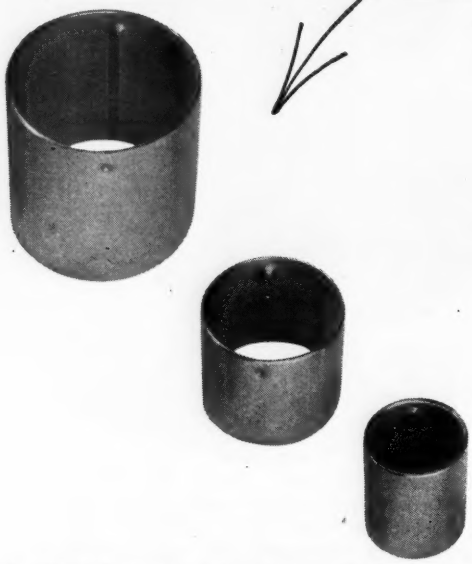
FERRACUTE

FERRACUTE MACHINE CO.

Since 1863, Manufacturers of Power Presses and Special Machinery. BRIDGETON, NEW JERSEY

Typical of Ferracute P press *Production* is this steel blank for mowing machine blades. Stamped out of .123" high carbon steel, 180,000 P.S.I. at 100 strokes per minute.

Dentists Can Tell You Why Stainless Tubing for <u>These</u>



Dental molding flasks and saliva ejector stand up under constant use, because they are made from Carpenter Stainless Tubing. The flasks withstand temperatures up to 1700° F., while the ejector is frequently sterilized.

Fabricators can tell you why it's easy to work with *Carpenter* Stainless Tubing!

Reports from dozens of experienced fabricators tell us that there are two reasons why it's easy to work with this tubing. First, analysis-tolerance-finish (and specials such as hardness) are always just the way you want them. That eliminates a lot of problems at the start of any job. Second, they tell us that the personal help they can get on any Stainless Tubing job helps to keep unit costs as low as possible.

When you want to discuss your design or fabricating problems, call your nearest Carpenter Stainless Tubing Distributor. He will be glad to put his experience to work on your essential jobs, and to help you plan for the future, too.

THE CARPENTER STEEL COMPANY
Alloy Tube Division, Union, N. J.
Export Dept., Reading, Pa., "CARSTEELCO"

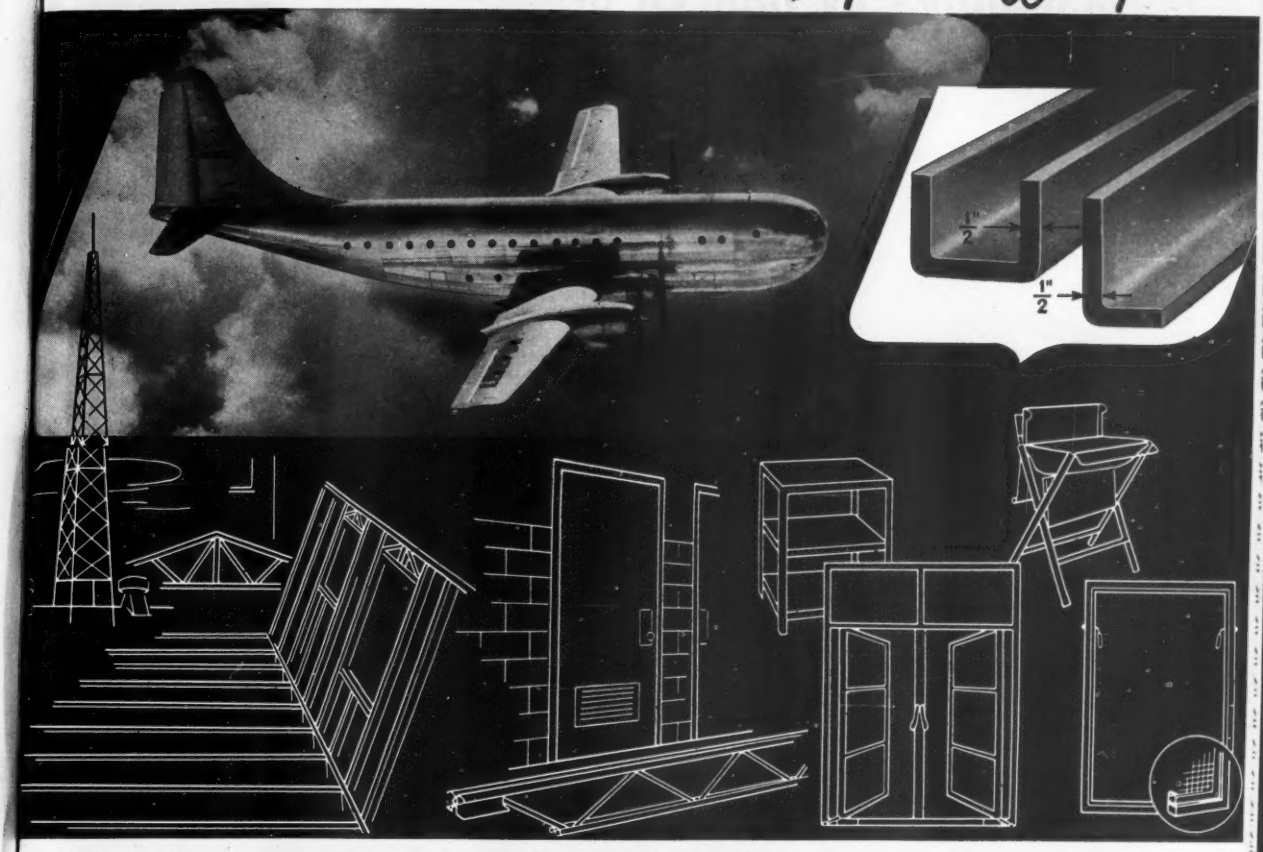
Carpenter
STAINLESS TUBING

more than corrosion resistance

—guaranteed on every shipment

THE U.S. NEEDS YOUR STEEL SCRAP NOW

for Greater Strength and Lighter Weight



COLD-ROLL-FORMED *Structurals*

FROM COILED STRIP, you can cold-roll-form plain angles, channels and Z's up to ½" thick. Or you can design shapes to fit your own special needs, at a great gain in strength, or saving in weight, or both. This saving often amounts to more than the entire conversion cost.

Illustrating the high strength-weight ratio of roll formed shapes is their universal use in airplane construction. A few other applications are steel towers for various purposes; framing members for light buildings; partition studs and joists; window frames and sash; doors and trim; metal furniture and fixtures, etc.

Output of a Yoder Cold Roll Forming Machine, with one operator and a helper, is normally at the rate of 4000 to 6000 feet per hour, making the conversion cost a small fraction of a cent per foot. The machine, therefore, may be profitable even if operated only a few days per month. Other operations such as coiling, curving, notching, etc., can be combined with roll forming.

Tell us about your needs in light structurals and we shall be glad to submit recommendations and estimates, without cost or obligation. Illustrated Hand Book on Cold Roll Forming on request.

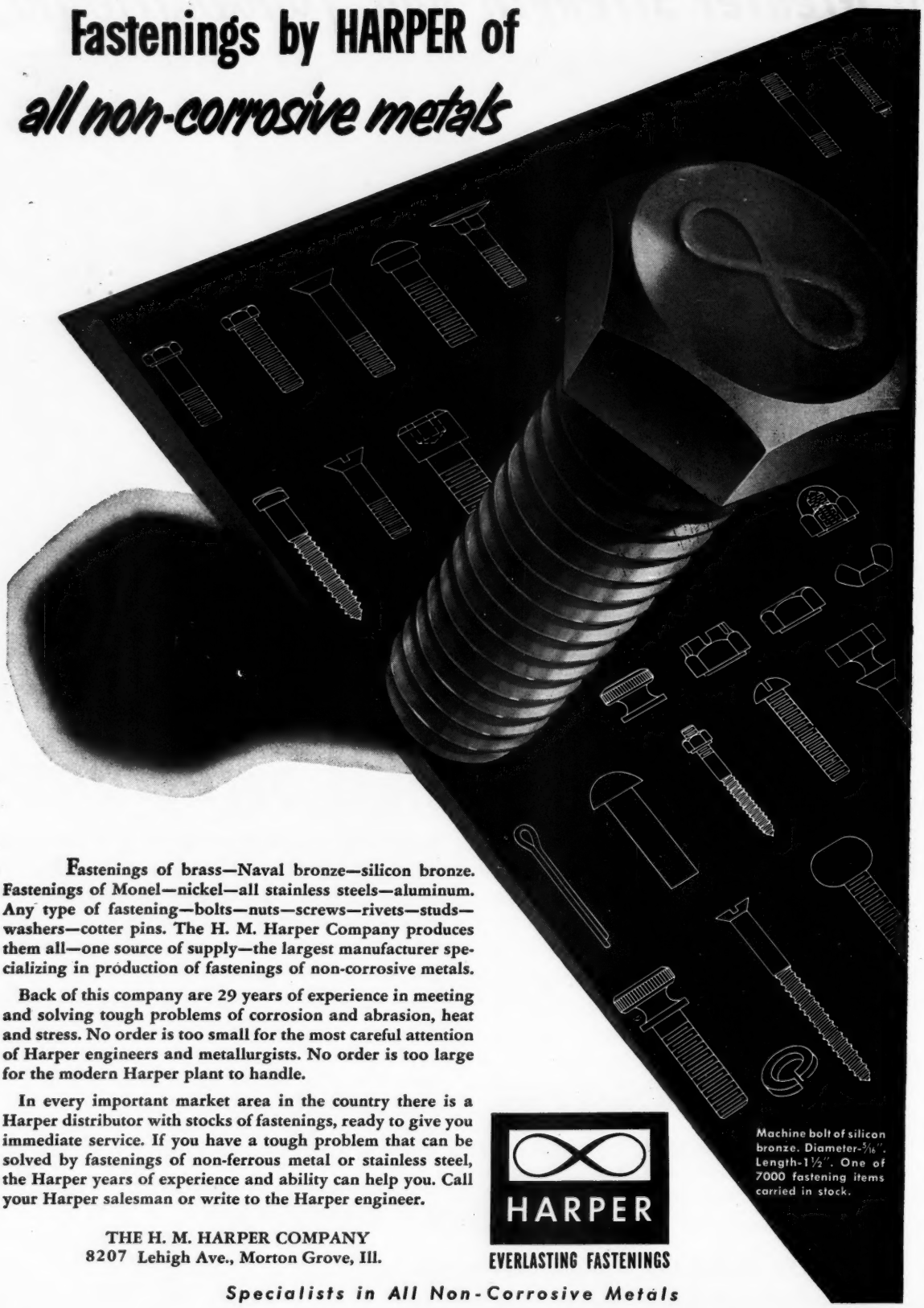
THE YODER COMPANY • **5502 Walworth Ave., Cleveland 2, Ohio**

Complete Production Lines

- ★ **COLD-ROLL-FORMING and auxiliary machinery**
- ★ **GANG SLITTING LINES for Coils and Sheets**
- ★ **PIPE and TUBE MILLS–cold forming and welding**

ENGINEERING YODER MANUFACTURING

Fastenings by HARPER of *all non-corrosive metals*



Machine bolt of silicon bronze. Diameter-5/16". Length-1½". One of 7000 fastening items carried in stock.

Fastenings of brass—Naval bronze—silicon bronze. Fastenings of Monel—nickel—all stainless steels—aluminum. Any type of fastening—bolts—nuts—screws—rivets—studs—washers—cotter pins. The H. M. Harper Company produces them all—one source of supply—the largest manufacturer specializing in production of fastenings of non-corrosive metals.

Back of this company are 29 years of experience in meeting and solving tough problems of corrosion and abrasion, heat and stress. No order is too small for the most careful attention of Harper engineers and metallurgists. No order is too large for the modern Harper plant to handle.

In every important market area in the country there is a Harper distributor with stocks of fastenings, ready to give you immediate service. If you have a tough problem that can be solved by fastenings of non-ferrous metal or stainless steel, the Harper years of experience and ability can help you. Call your Harper salesman or write to the Harper engineer.

THE H. M. HARPER COMPANY
8207 Lehigh Ave., Morton Grove, Ill.

HARPER
EVERLASTING FASTENINGS

Specialists in All Non-Corrosive Metals

Plenty BIG ...and ACCURATE, too

from PHILLIE GEAR

When you need big gears like the helical gear shown here it will pay you to order from Phillie Gear. We have the engineering know-how gained through 60 years of gear making plus modern plant facilities for producing them to your most rigid requirements.

From designing to finishing each step is under our close control to assure the high quality and precision of every gear. Exacting inspections make certain that the gear is accurate to your specifications.

Philadelphia makes spur and helical gears up to 150 inch diameter, 48 inch face; Worm gears up to 150 inch diameter; Continuous tooth herringbone gears up to 60 inch diameter, 18 inch face; bevel gears up to 96 inch diameter.

OUR 60TH ANNIVERSARY

More details are in our Gear Catalog #48. Write for a copy on your business letterhead.

Philadelphia Gear Works, INC.

ERIE AVE. AND G ST., PHILADELPHIA 34, PA.

NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA.

Industrial Gears and Speed Reducers
LimiTorque Valve Controls

EMERGENCY PRODUCTION *pays off*

with long steady runs of B&L Free-Machining COLD FINISHED STEELS

Whether your equipment is yesterday's model or today's latest automatic, you can get more out of your machines by using B&L uniform-cutting Screw Stock and the engineering service that goes with it.

If your plant is being converted to emergency production of defense parts, you need to use a grade of steel that will develop the full capacity of the machine, and also satisfy the service requirements of the job.

There are sulphurized Bessemer steels, medium or low carbon Open-Hearth screw stock and special Free-Machining grades in the cold drawn, annealed or Strain-Tempered condition or furnace treated alloys to suit your application.

Refer your problem to B&L service engineers . . . they can help you select the type of steel to provide maximum machine efficiency.

SCRAP is vitally needed for Defense Steel . . . be sure your SCRAP goes back to the mills

BLISS & LAUGHLIN, INC.

GENERAL OFFICES: HARVEY, ILLINOIS

PLANTS: HARVEY, ILL. • BUFFALO, N. Y. • MANSFIELD, MASS.

SALES OFFICES IN ALL PRINCIPAL CITIES

B&L SINCE 1891

You name the job...VERS-O-TOOL has the cost-cutting answer

Whenever you need accurate, *economical* threading or forming cuts, there's no faster way than to use Namco chasers or hollow milling cutters, interchangeable, size for size, on *the same* Vers-O-Tool head. Regardless of your lot size, there's a chaser or cutter exactly suited to your needs—*and your production budget.*

An important part in the savings you'll make on such jobs stems from this versatility of Vers-O-Tools. Less money is tied up in tool inventory. But there are other savings, too: longer tool life, faster production, fewer rejects.

And Vers-O-Tools are space savers. You can use them on many jobs where other die-heads won't fit in. What's more, quick diametric adjustment of the cutters permits set-up in a matter of seconds.

Like more facts? Ask for Catalog D 51.

24-HOUR DELIVERIES ON STANDARD STOCKABLE NF AND NC CHASERS WITH BLOCKS

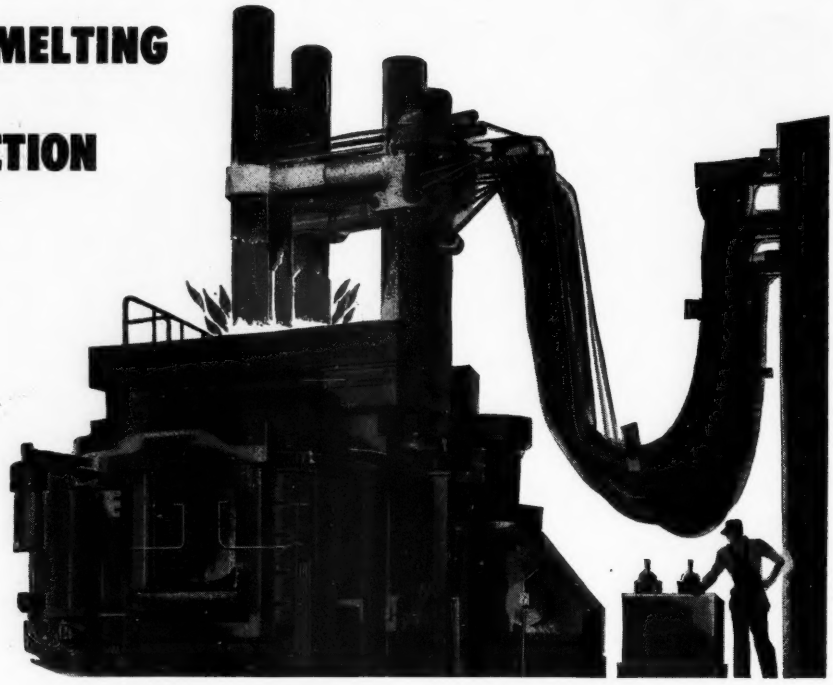
The NATIONAL ACME CO.

170 EAST 131st STREET • CLEVELAND 8, OHIO

Acme-Gridley 4-6 and 8 Spindle Bar and Chucking Automatics • Single Spindle Automatics • Hydraulic Thread Rolling Machines • Automatic Threading Dies and Taps • The Chronolog • Limit, Motor Starter and Control Station Switches • Solenoids Centrifuges • Contract Manufacturing

Lectromelt*

FURNACES FOR MELTING, REFINING, SMELTING AND REDUCTION



35 years ago, the first Moore Rapid Lectromelt Furnace was put to work, setting the pace which established these furnaces as leaders in industry. Bold thinking throughout the years has maintained that position and, today, Lectromelt Furnaces are first choice internationally for all types of melting, refining, smelting and reduction.

From the automatic controls that guide the operation of a Lectromelt Furnace to its massive shell, Lectromelt Furnaces are built as production tools. Assembled and mechanically operated on the erection floor at Pittsburgh, they go together faster in your plant, and you get into production with minimum delay.

Lectromelt Furnaces offer you rapid top-charging, high-speed melting, accurate control of quality and low-cost operation. They give long, trouble-free service and correspondingly low upkeep costs. We sell mighty few replacement parts; evidence of their durability.

Catalog No. 8 describes iron and steel melting and refining work. For a free copy, write Pittsburgh Lectromelt Furnace Corporation, 323 32nd Street, Pittsburgh 30, Pennsylvania.

Manufactured in... CANADA: Lectromelt Furnaces of Canada, Ltd., Toronto 2... ENGLAND: Birlec, Ltd., Birmingham... AUSTRALIA: Birlec, Ltd., Sydney... FRANCE: Stein et Roubaix, Paris... BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege... SPAIN: General Electrica Espanola, Bilbao... ITALY: Forni Stein, Genoa.

*REG. T. M. U. S. PAT. OFF.

WHEN YOU MELT... MOORE RAPID Lectromelt

ADDING NEW STRENGTH TO THE WEST

Kaiser Steel's third blast furnace to increase Pacific Coast's production of new metal 50%

THE urgent need of more steel is as clear as the front page of your newspaper. And the production of new steel must start at the heart of a steel mill—its blast furnaces, which make pig iron for conversion into steel.

To help meet this need, Kaiser Steel—now operating the only two blast furnaces on the Pacific Coast—has started construction of a third. Scheduled for completion in the spring of 1953, this blast furnace will increase Kaiser Steel's pig iron output by 50 per cent—438,000 additional tons a year.

Kaiser Steel's expansion program, entirely privately financed, also includes:

. . . a ninth open hearth furnace to increase production of steel ingots

. . . ninety new by-product coke ovens to supply coke to the blast furnaces

. . . two new roll stands in the present hot strip mill, to enable it to roll sheet of lighter gauges and greater widths.

Naturally, this expansion means more prosperity for the West, through additional jobs and increased purchases of materials.

More important, it means that manufacturers here will be less dependent on steel produced in other areas . . . bringing the West another step forward in its advance to industrial self-sufficiency.

It's good business to do business with

Kaiser Steel

built to serve the West

KAISER STEEL CORPORATION, LOS ANGELES, OAKLAND, SEATTLE, PORTLAND, HOUSTON, NEW YORK

LINDE'S News of Metalworking

Sigma Welding...

A Process with Outstanding Promise

Recently, the country's biggest tank car manufacturer received the largest order for aluminum tank cars ever issued — ninety-eight tank cars on a single order. This order was obtained only because of the development of a fully automatic welding process . . . shielded inert gas metal arc welding — sigma welding.

This welding process has made double-vee butt welds at 5 in. per min. in 1-in. material. Structural welds have been made at 48 in. per min. in ¼ in. plate, and as high as 200 in. per min. on 1/16 in. material.

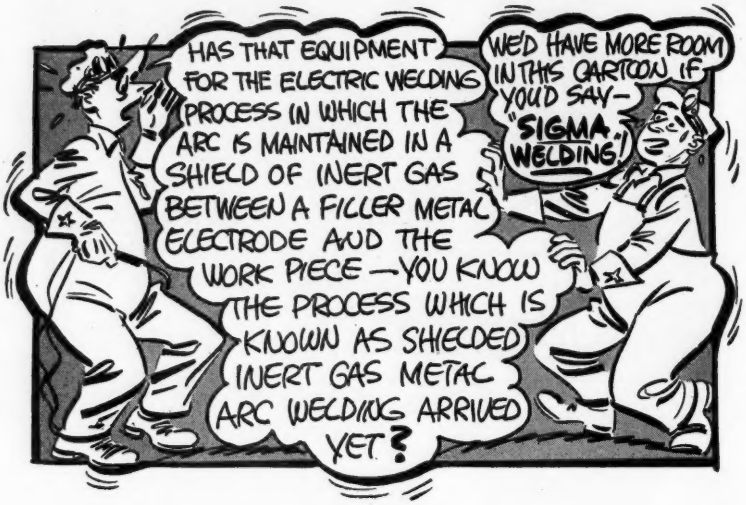
Prior to the development of sigma welding, fabricating aluminum tank cars was a slow hand process. In order to weld the heavy plates used in making the cars, as many as six passes were required.

With an automatic sigma welding setup, X-ray quality welds in the ½ to 1¼ in. thick aluminum plates are made at speeds of from 6 to 15 in. per minute. And only 2 passes, one inside and one outside, are required to get perfect penetration. High current densities used in sigma welding result in narrow welds with deep penetration.

Sigma welding is fast becoming an important fusion welding method. It has not only replaced many other welding methods, but has permitted fabrications hitherto impracticable for welding.

Just recently, a metalworker adopted this process for welding an aluminum-bronze valve seat to a mild steel tube . . . sigma welding proved to be the only practical method he could use for this work.

Another shop built their first *aluminum tank using sigma welding* . . . The large tank was finished so quickly — work progressed without stopping — that the shop will replace all other welding methods with sigma welding. Excellent welds *requiring little finishing* were obtained in the ½ in. aluminum plates.


HAS THAT EQUIPMENT FOR THE ELECTRIC WELDING PROCESS IN WHICH THE ARC IS MAINTAINED IN A SHIELD OF INERT GAS BETWEEN A FILLER METAL ELECTRODE AND THE WORK PIECE — YOU KNOW THE PROCESS WHICH IS KNOWN AS SHIELDED INERT GAS METAL ARC WELDING ARRIVED YET?
WE'D HAVE MORE ROOM IN THIS CARTOON IF YOU'D SAY — "SIGMA WELDING!"

New Processes Need New Names

The cartoon shows just about the way it started . . . Shielded inert gas metal arc welding was quite a mouthful to say when describing or referring to the process. It also required a lot of space in written material.

Then someone said sigma welding. It was easier to say.

Sigma is a good word, too. Each of the letters is an initial letter of the words: shielded, inert, gas, metal, and arc.

This easy-to-say word, sigma, is now used to describe the process. It is not a trade-marked word, and is used in the same sense as oxy-acetylene welding, gas cutting, or brown dog — just like any other descriptive adjective.

Metals Being Joined by Sigma Welding

Sigma welding can be used on practically all commercial metals. Railroad tank cars, chemical and food processing tanks, pressure vessels, and brewery equipment are only a few applications where the process is being used economically. Here's a quick look at some of the metals being joined by this process:

Aluminum . . . All weldable grades including 3-S, 50-S (150-S), 52-S, 61-S, and the commercially pure 2-S alloy are being welded with excellent results . . . These alloys are being machine welded in thicknesses ranging from 0.50 in. to 1.50 inch . . . Hand welds are made in material ⅜ in. and thicker . . . Maximum thickness that can be welded is unlimited with multi-pass technique . . .

Stainless Steel . . . Sound X-ray quality butt welds have been obtained in thicknesses ranging from ⅜ to ½ inch . . . Quite evident that heavier thicknesses can be welded . . . Results of tests show that welds possess good tensile strength, elongation, and impact resistance . . .

Copper . . . Sound butt, fillet, and corner welds have been made in ⅛ in. and ¼ in. deoxidized copper.

Everdur . . . Butt welds made in ⅛, ¼, and ½ in. thick materials are sound, smooth, and without cracks or undercutting. Tests showed that bend and tensile specimens have excellent properties.

Carbon Steel . . . Sound machine butt welds have been made in ⅛ in., ¼ in., and ½ in. thick killed and semi-killed carbon steels . . .

Aluminum Bronze rod has been deposited on mild steel with excellent results . . . Wear resistance greatly improved . . . Other surfacing and buildup operations very successful . . .

LINDE'S Apparatus for Sigma Welding

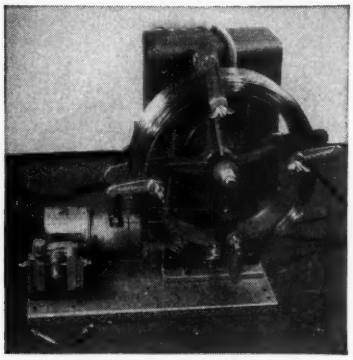
Here is LINDE's sigma apparatus for either machine or hand-welding. It provides automatic operation, accurate and uniform control of rate of rod feed, easy handling, and simplicity of operation . . . Everything to help you make X-ray quality welds at high speeds.

Hand Torch Designed for Easy Handling

The LINDE HW-11 Torch is designed for sigma hand-welding. It is lightweight, and pistol-shaped to provide a convenient grip and easy handling. The gas cup and torch power cable are water-cooled for protection from overheating. All hoses to the torch are bound together in a synthetic rubber sheath which is highly flexible.

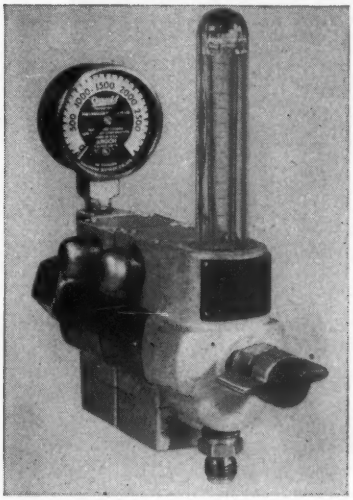
The rated capacity of the torch is 400 amp. when cooling water flow is 1 qt. per min. at inlet temp. of 60 deg. Fahrenheit.

Simple Assembly Controls Rod Feed



LINDE's Rod Feed and Control Assembly for hand-welding, automatically controls rod feed at all times. Rod is fed at a constant predetermined speed which is regulated by an electronic governor. Rate of rod feed depends on the current and material being welded, and can be easily adjusted by a potentiometer. A rough initial setting for the potentiometer is determined from welding data tables. After the arc is struck, the operator can adjust the potentiometer, if necessary, to get a steady, smooth arc. Welding is then done without any further adjustments.

Argon Regulator Assures Uniform Gas Flow

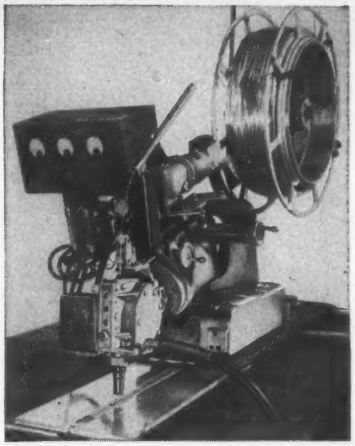


The OXWELD R-502 Regulator, designed specifically for inert gas welding, reduces the pressure of the argon stored in the cylinder to the working pressure needed. One simple setting adjusts it to supply the torch with the correct rate of argon flow required for the work at hand. A built-in flowmeter and throttle valve always show the flow of argon used. The indication is always true, and is not affected by the pressure drop between the valve and the working end of the torch.

Machine Welds Made at High-Speed with the FSM-1

LINDE's FSM-1 machine makes clean, smooth welds. Welding is fast and weld quality high. Almost any metal thickness can be welded by a suitable number of passes.

The FSM-1 is recommended for welding long seams, or for work that is fairly repetitive. The welding head can be positioned for practically any work requirement. It has provisions for vertical and lateral adjustments in two planes for the angle at which the welding rod is fed into the weld zone. Retract starting provides for starting the arc quickly and conveniently.



LINDE Argon (99.92% pure), and Sigma Grade

For welding stainless and carbon steels, LINDE argon — sigma grade, a mixture of oxygen in argon, speeds metal deposition. It permits welding at high speeds without undercutting, improves coalescence of the weld metal, and makes overhead welding of stainless steel practicable.

For those metals requiring a pure argon gas, LINDE offers standard welding argon that is 99.92 per cent pure. This high purity makes it the best all-around shielding gas.

For further information about LINDE's equipment for sigma welding, please contact any LINDE office.

The terms "Linde" and "Oxweld" are registered trade-marks of Union Carbide and Carbon Corporation.

LINDE AIR PRODUCTS COMPANY
A DIVISION OF UNION CARBIDE AND CARBON CORPORATION
30 East 42nd Street UCC New York 17, N. Y.
Offices in Other Principal Cities
In Canada:
Dominion Oxygen Company, Limited, Toronto

SHEARING and FORMING a GIANT

The Story of a Team

Steel sheets for these Giant Marion Shovels are formed with great accuracy on a Cincinnati 210 Series Brake. The blanks sheared square and true on a Cincinnati 100 Series Shear contribute to this accurate forming that speeds and simplifies assembly.

This Cincinnati Brake, with 16 feet of die surface, is forming $\frac{3}{8}$" plate into lower frame pieces. The one inch capacity shear is cutting $\frac{3}{4}$" plates for the shovel platform or upper deck.

Save time, save money with this dependable Cincinnati Team.

Write for Shear Catalog S-6 and Brake Catalog B-3.

The Marion 5561, World's Largest Mobile Land Product, with a 45 cubic yard shovel. Photos—Courtesy of Marion Power Shovel Co., Marion, Ohio.

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

The Metalworking Outlook

May 12, 1952

Defense Act Emasculated?

President Truman's steel seizure and comments about this Congress' lack of action on his pet projects have so incensed many of the legislators that it now appears certain the Defense Production Act, which expires June 30, will be extended in an emasculated form only. The watered-down version may also be extended only until next Jan. 20 when a new president takes office. One provision may permit price controls to be completely discarded within six months.

Budget Troubles

The House-voted limit on military expenditures of $46 billion may make it impossible to attain even the armament program revised after the one-year stretchout in defense production plans. The $46-billion ceiling is $6.5 billion less than the Defense Department (chiefly the Department of the Air Force) had planned to spend in 1953. Thus, that ceiling jeopardizes even the lowered sights for aircraft output. Before the stretchout, the schedule called for 1800 planes being built a month in 1953. Then, that was lowered to 1250 per month. Aircraft men are now asking: "What revisions next?" The Senate may restore the cut.

Defense Spending: Rising

Department of Defense expenditures for military hard goods are steadily rising—$2.6 billion in January, $2.9 billion in February. Spending—and deliveries—will not reach a peak until early 1953. Even by 1955 military spending on hard goods will be higher than it is now, with monthly averages leveling off at about $3 billion. New orders for military hard goods are beginning to fall a little now, and the emphasis from here on will be on deliveries.

Changes in Renegotiation

Congress may vote some changes in renegotiation procedures to make them more liberal, especially for small business. Although virtually nothing has been renegotiated yet by the slow-moving Renegotiation Board, companies are bringing pressure to bear on their representatives. They almost all have had experience with the practice in World War II and fear the worst.

Hope for Small Business

Today begins a project that may mean more Air Force contracts for small business. Small Defense Plants Administration is sending a group of procurement specialists to Wright-Patterson Air Force Base to work with the Air Materiel Command on ways and means to boost the ante for the little company. Similar plans are being worked out with the Quartermaster and Signal Corps. The percentage of defense contracts going to small business has been steadily declining.

Decontrol Drive Continues

The drive for decontrol of steel will continue despite the tonnage losses from the strikes. Last Wednesday, sales vice presidents meeting as

Production-Engineering News—p. 87 *The Market Outlook—p. 171*

the Steel Products Industry Advisory Committee presented to NPA a plan for decontrols more sweeping than anything the government has yet devised. Even tool steels are now easier to obtain. A greatly improved supply of tungsten accounts for that; men in the tool steel business are urging NPA to remove restrictions on melting and distribution of the material.

The FTC Takes a Look

Trouble is brewing over automotive parts prices. The Federal Trade Commission is launching an investigation to learn if anything unlawful is going on. The Commission was prodded into such action as a result of hearings by the House Committee on Expenditures which turned up what it thought was "a failure among vehicle assemblers to compete in the sale of replacement parts to the government." The FTC says it's going all-out on the matter.

Farmers Still Do Well

The farmers are still doing well, will still have enough money to buy a lot of machinery and appliances, despite talk to the contrary. Their net income in 1952 is expected to be about the same as or slightly smaller than the $14.9 billion they realized last year. True, rising agricultural costs are making farmers cautious, but they'll still buy a lot of goods.

Straws in the Wind

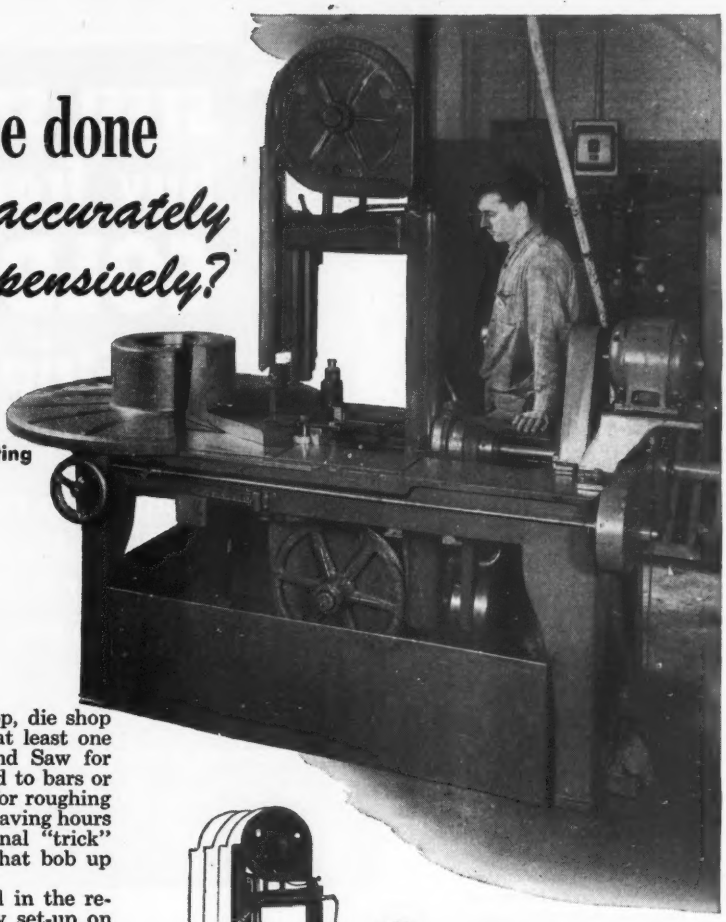
The steel union may come down on wages, but it appears adamant on the union shop issue . . . Monarch Machine Tool Co. has a backlog of orders for 400 T-type lathes and is producing them at the rate of about one a day . . . ACF-Brill Motors Co. and Foremost Dairies Inc. have voted to merge . . . The Federal Reserve Board has tabled its voluntary credit restraint program, the plan whereby it set up rules that banks could follow in making loans . . . Radio Corp. of America will introduce several new electronic devices, for inventory control, television and printing . . . When Manly Fleischmann leaves his DPA post at the end of this month, Henry M. Fowler will move up from NPA to fill his shoes . . . WSB Chairman Nathan Feinsinger will quit by June 30, and possibly as soon as a steel settlement is reached.

What Industry Is Doing

The Supreme Court is expected to hand down a clearcut ruling on steel case (p. 59) . . . Few industrial operations are now hard hit by the oil strike (p. 60) . . . Inventories of basic metals and components are drifting downward (p. 61) . . . Major steel companies are not asking for price increases under the Capehart formula (p. 61) . . . Aim of the new Production Policy Advisory Commission is to stabilize demand for capital goods (p. 63) . . . British hopes for denationalization of transportation are good—for steel, poor (p. 69) . . . Pipeline builders see record year in 1952 (p. 71) . . . Undetermined costs deter production of synthetic gasoline (p. 70).

How else could this job be done

so easily, so accurately and so inexpensively?



Segmentation of 42″ Steel Casting

Every tool room, machine shop, die shop and maintenance department needs at least one No. 8 MARVEL Metal-cutting Band Saw for cutting off anything from ⅛″ drill rod to bars or billets of 18″ x 18″ cross-section . . . for roughing large work to size and shape, thereby saving hours of machining . . . for those occasional "trick" jobs, impossible on any other saw, that bob up in every plant.

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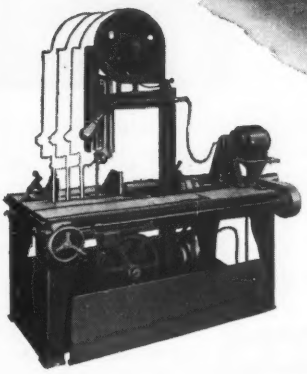
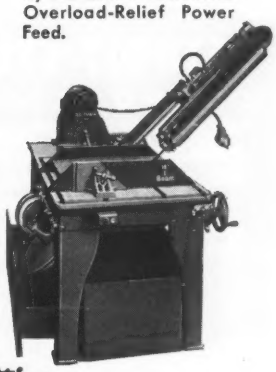
Close limits are further assured through the work being clamped rigidly to the bed of the saw and the blade power-fed through it instead of pushing the work through the blade. This is also true in miter cutting, as the blade column—*not the work*—is swung to the required angle. The handiest, most versatile machine tool, it is also the busiest in most shops.



This double exposure illustrates how the blade maintains its vertical position while moving into and through the work, impelled by the automatic MARVEL Overload-Relief Power Feed.



Column set at angle to cut 45° miter on 18″ beam. Entire saw column can be swung to cut at any angle from vertical to 45° right or 45° left.

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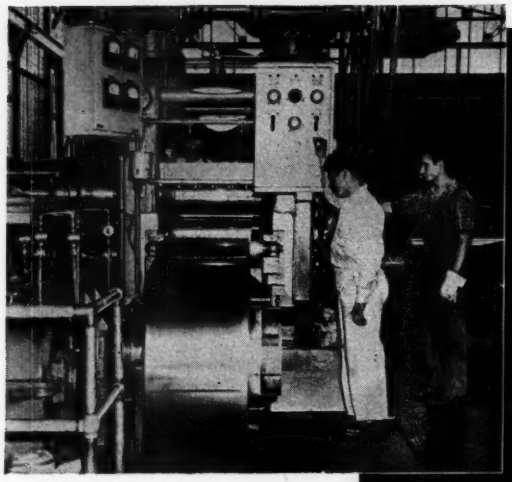

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Work To Be Done

A few days ago a well-informed executive remarked that the terrible steel price-wage-seizure mess is responsible for at least one blessing in that at long last it has given the steel companies a "favorable press."

It is true, of course, that the high-handed actions of the Wage Stabilization Board, President Truman, Ellis Arnall and others have brought forth a flood of editorial comment which is preponderantly favorable to the steel companies' case. Naturally this is gratifying to everybody identified with steel, especially in view of the fact that steelmakers in common with most other units of business have been more in than out of the public's dog house for a long time.

However, it would be a grave mistake to conclude that the present support of steel's case by the public signifies any marked change in the attitude of the man in the street toward steel or any other business. We believe the present public support of steel's position stems more from a feeling that steel's battle is an integral part of the people's battle for freedom. Steel just happens to be the industry whose problem brought the greater danger to the attention of the public forcibly and dramatically.

If industrialists will be honest with themselves, they will confess that the efforts of business to "sell" its philosophy to employees and to the public have fallen far short of success. In spite of the expenditure of many millions of dollars and the employment of outstanding specialists, business has not yet found a formula for public and employee relations that really "clicks."

Therefore, as long as this situation exists, it will not be wise to permit the present favorable tone of public comment to sway us from the formidable job of winning a better understanding of industry's position by the public and by employees.

If by good fortune and hard work, steel does win a place of higher esteem as a result of the present mess, then the industry's objective should be to capitalize on that good will and to strive for a still greater measure of public acceptance.

E. C. Shaner

EDITOR-IN-CHIEF

THE TIE THAT BINDS: Thousands who attended the International Foundry Congress and Show in Atlantic City came away with the conviction it was a great triumph for its sponsor, the American Foundrymen's Society. The exposition was impressive in its portrayal of new techniques in foundry practice. The technical program excelled in the scope and depth

with which it dealt with pertinent and timely metallurgical and operating problems.

With due respect to its merit from these orthodox standpoints, its chief claim to distinction was in the manner in which it illustrated the potential of international co-operation in technology. At a time when outbursts of nationalism are creating diplomatic tensions all over the world, it was inspiring to note at the International banquet on May 3 how closely representatives of two score nations are drawn together by the common bond of interest in improving the "know how" of making castings.

Events of this kind are important in our relentless search for a key to enduring peace. Progress in technology is a universal focal point around which a better understanding between nations can be created. AFS deserves credit for emphasizing this truth so dramatically at its Atlantic City Congress and Show.

* * *

HIS VIEW ON SEIZURE: Judge James P. McGranery, nominated by President Truman to be Attorney General, was questioned closely last Tuesday by members of the Senate Judiciary Committee as to his views on what powers the President possesses in connection with the seizure of property.

In general, his answers seemed to imply that had he been in office on Apr. 8, he would have advised Mr. Truman against seizure. He expressed the opinion that the President should not seize property without Congressional action "if Congress is in session and circumstances permit." Asked whether the President should use inherent powers before he has exhausted the statutory powers, Judge McGranery replied, "No. No man is above the law." At another point in the hearing, he stated that "You can't take private property and maintain our American way of life." He declined to say what he would do if the President told him he wanted to seize a specific industry.

* * *

WON'T VOTE EN MASSE! A significant feature of last Tuesday's primary elections in Ohio was the poor showing made by prominent labor union officials. Weeks before President Truman announced he would not be a candidate for the presidency, the Democratic-New Deal machine in Ohio chose former U. S. Senator Robert J. Bulkley to head a favorite-son ticket friendly to Mr. Truman. Among the Bulkley-pledged delegate-at-large candidates were Jack Kroll, CIO-PAC director; Phil Hannah, secretary of the Ohio Federation of Labor; and George M. Harrison of the railroad brotherhoods.

In spite of their strong backing by machine Democrats and labor unions, these three went down to defeat before the onslaught of Sen. Estes Kefauver, who had no machine organization or backing worthy of the name. This is another indication that the so-called labor vote cannot be delivered en-masse.

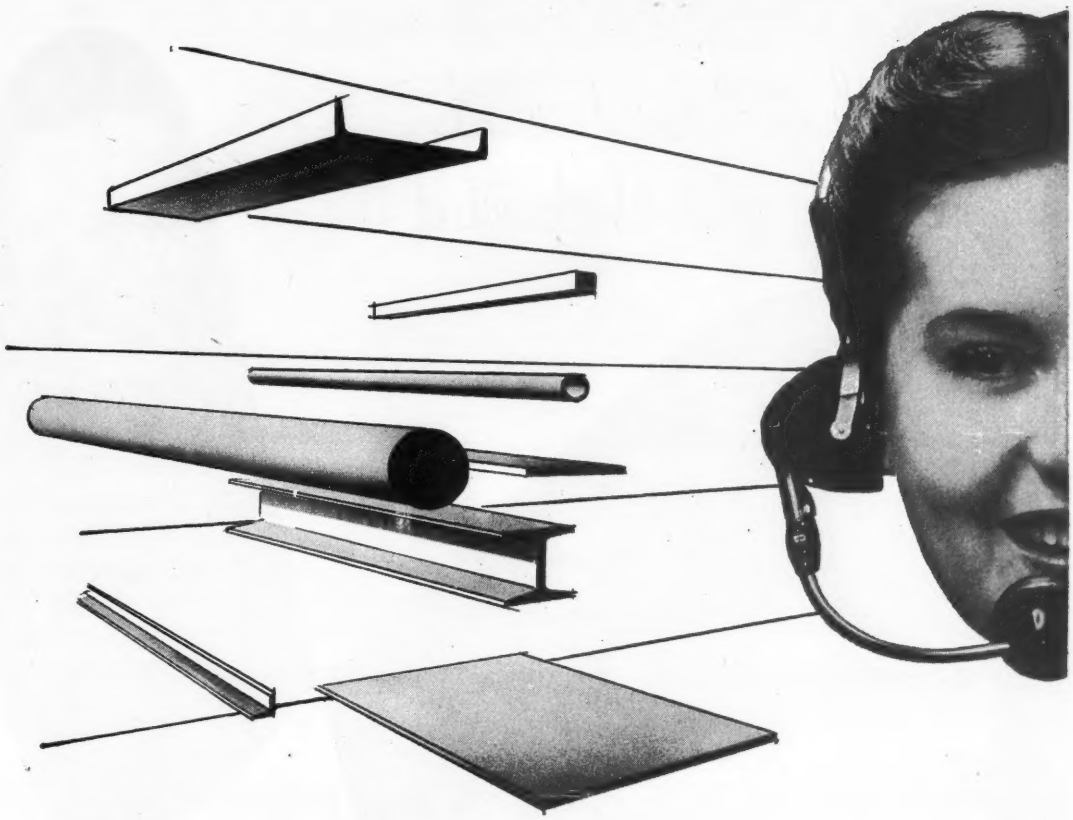
* * *

HERE IS OPPORTUNITY: More than 700 stockholders attended the annual meeting of the United States Steel Corp. at Hoboken, N. J., last Monday. This was the largest attendance recorded at any of the corporation's 51 annual meetings. Chairman Irving S. Olds went to great lengths to explain to stockholders all of the details which led to the present state of seizure and court appeals. The response of the owners of the corporation's stock was an overwhelming endorsement of management's handling of the corporation's interests in this crisis.

This event, coupled with the larger attendance that has graced stockholders' meetings of other companies, raises the question as to whether corporations are capitalizing on stockholders' meetings to the extent that is desirable. Do they not present a good opportunity for constructive education?

* * *

VERSATILE SERVANT: In addressing the Engineers' Council of Houston, Dr. R. E. Zimmerman, consultant to U. S. Steel Co., emphasized the important part research is playing in offsetting the difficulties created by shortages of materials. He cited (p. 108) processes for recovering manganese from open-hearth slags and lean domestic ores to offset the reduction in imports from Russia. Use of boron in certain steels is conserving molybdenum, chromium and nickel. Refinements in electrolytic tinning now permit production of coatings that require as little as one-fifth the amount of tin used formerly. He also referred to research which has enabled treatment of carbon steels to serve purposes for which short alloy steels normally are specified. These and many other instances indicate that intelligent research is a versatile agency—ready to serve in any kind of emergency.



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This new galvanizing line is another of the improved steel-making facilities that help Inland to produce better quality steels in record-breaking quantities.

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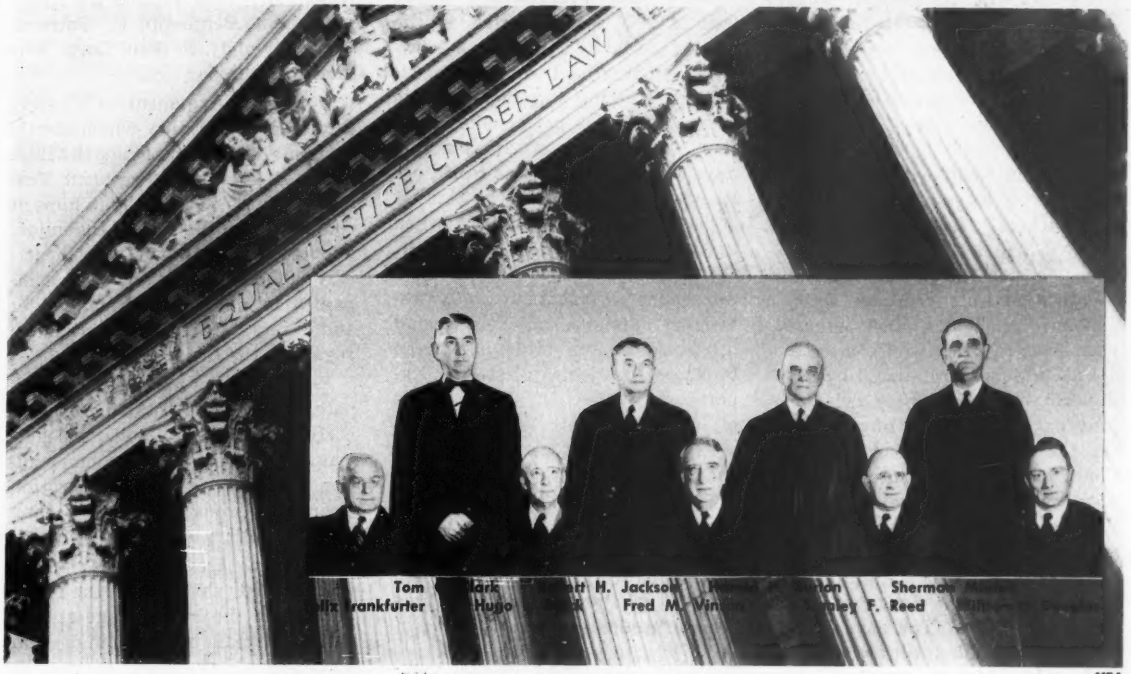


NEA

High Court Ruling on Steel Possible Within a Week

The Supreme Court is expected to make a clearcut decision, not evade the issue. If it rules in favor of industry, another strike is likely

THE VACUUM that developed last week around the steel case may be broken in the next seven days.

Legal men close to the case believe chances are good that the United States Supreme Court can rule by next Monday on the constitutionality of the steel seizure. Gravity of the issue dictates speed in handling the matter, on which hearings begin today (May 12).

Around the Corner—Late last week steel production had climbed back nearly to normal. But many in the industry—management and labor—felt they were working in an aura of weird abnormality.

The High Tribunal can do one of three things. It can compromise on the constitutional issue by referring the case back to District Judge David A. Pine with an order to modify his original injunction. It can completely reverse Judge Pine and uphold the government seizure, in which case the government will probably go through with its original plan of giving the steelworkers a good raise by fiat. It can uphold Judge Pine, in which case the steel companies regain their property, the government can act only as a mediator and a strike will probably occur.

For Steel?—As it appears now, the first course is highly unlikely. It also appears that the second course is not probable because a majority of the justices—judging from past court decisions and known philosophies—favor limits to a President's power. Chief Justice Vinson and Justices Frankfurter, Jackson and Burton definitely tend toward an interpretation of limited powers for the President. Justices Black and Reed lean toward more liberal powers, but never have they gone as far in their interpretations as the Administration would have them go. Justice Douglas' opinions have varied widely; nobody can predict what he will rule on the basis of his past decisions. Justice Minton, the most recent appointee to the court, has not been on the tribunal long enough for observers to get an idea of his constitutional beliefs. Justice Clark was expected to disqualify himself because as attorney general he once delivered an opinion that the Chief Executive's powers are very broad.

Events in the steel case can—but probably won't—take still another turn. The union and management could come to terms before the Supreme Court rules. In that unlikely event, the case would become moot and no decision on constitutional issues would be made.

It Can Happen Here

NEARLY everything in the book has happened to the steel industry in the past month.

On Apr. 8 President Truman seized most of the industry on the eve of a strike, presenting a version of the facts that was refuted

Apr. 9 by Inland Steel Co. President Clarence B. Randall. On that same day, U. S. District Judge Alexander Holtzoff refused to grant a preliminary court order restraining the seizure.

Status Quo—A precarious status quo lasted from then until Apr. 29. By that time the government, as the nominal employer, was about to grant a wage increase to the steelworkers. But U. S. District Judge David A. Pine's decision of Apr. 29 that the seizure was unconstitutional stopped such action, and on Apr. 30 the steel industry went back to its private owners.

Philip Murray retaliated by calling his union members off their jobs on the evening of Apr. 29. On the evening of Apr. 30, the Court of Appeals granted a stay-of-execution on Judge Pine's injunction which in effect left the government in control of the steel industry. The court granted the stay to permit the Supreme Court to hear the case. The government had the case filed with the High Tribunal by May 2. On that same day Philip Murray called off the steel strike.

Punctured—By May 3, the union and steel management were again around a conference table, this time in the White House at President Truman's behest. The President told the company officials that if a settlement wasn't reached he soon would grant the steelworkers a raise by fiat. A few hours later, that threat was punctured like a toy balloon by the Supreme Court's announcement that it would hear the steel case but that the Administration could grant no pay hikes while the court's final decision on the case was pending. On May 4 the White House peace talks collapsed.

Late last week it appeared that only the Supreme Court decision will permit progress toward a settlement of the dispute.

Lost: 2,360,000 Tons

OFF-AGAIN, on-again steel production since Apr. 8 has resulted in an irreparable loss of 2,360,000 tons of steel ingots.

The strikes that began Apr. 8 before the President's seizure of the steel industry meant a loss of nearly 945,000 tons. The strikes that began Apr. 29 resulted in a loss of 1,416,000 tons.

Warehouse Freeze—The heavy loss in the second strike is the reason given by NPA for a slowness in lifting its Direction No. 11, the one freezing warehouse stocks of steel. It was not revoked until the middle of last week, some six days after the strike was called off. It was also used for the Apr. 8 strike, but lifted promptly when the men went back to work.

The freeze especially affected warehouse shipments to auto producers, appliance makers and other consumers who use large tonnages of jobbers' steel. Exports were also curtailed. Users of small amounts of warehouse steel were not greatly affected by the freeze.

Fighting, Not Fading

U.S. Steel's Olds reaffirms his stand in steel dispute in retirement address

AMONG HIS LAST official comments as chairman of the board of United States Steel Corp., Irving S. Olds roundly condemned President Truman's seizure of the steel industry.

The occasion was the 51st annual meeting of the corporation's stockholders in Hoboken, N. J., at which Mr. Olds retired as chairman, and Benjamin F. Fairless, president of U. S. Steel Corp., was named to succeed him.

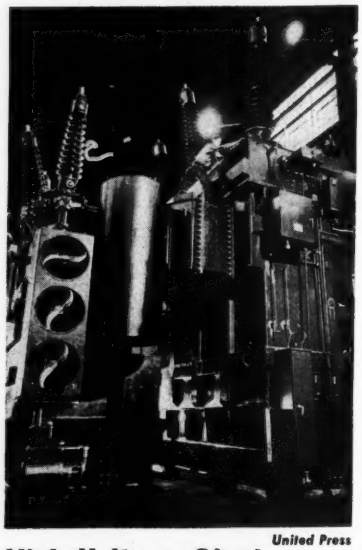
One-Sided Argument — "Casting aside the impartiality which should be found in one occupying the high office of President, President Truman," Mr. Olds said, "put himself completely on the side of the union, adopted its argument wholeheartedly and castigated the steel companies in no uncertain language; and I regret to say without much regard to the facts."

Reviewing the current labor dispute, he said the total increase in costs which would result from putting into effect the recommendations of the Wage Stabilization Board is estimated at more than a billion dollars a year.

Excuses, Excuses — Mr. Olds pointed out that since the WSB announced the initial wage stabilization formula more than a year ago, wages have been allowed by the government frequently to go up on this pretext or that, so that the formula today puts no apparent limitation on how high wages can advance.

"The same is not true of price control. The Office of Price Stabilization continues to insist that its arbitrary, self-imposed price formula of 1951 is sacred and not subject to change."

Before adjourning, the stockholders gave an overwhelming vote of approval to U. S. Steel officials on their stand in the price-wage dispute.



United Press

High Voltage Giant

Called the world's largest high voltage transformer, this 250-ton giant was just shipped from Westinghouse Electric Corp.'s Sharon, Pa., plant. It contains 77 miles of copper wire and 22,000 gallons of insulating, cooling oil

Industry Oil Situation Good

The oil strike last week had not seriously affected many industrial operations.

Even in Chicago, where the pinch hurts the most, few companies had been hit directly by lack of oil, although Inland Steel Co. was using tar from its coke ovens as a substitute for fuel oil in open hearths.

Chicago Bridge & Iron Co. couldn't ship completed tanks and roof covers to struck refineries, but an oil shortage had not yet affected its production.

Late last week, about one-third

of the nation's refinery and pipe line workers were still out, despite WSB's plea for an end to the strike. The agency will try to get together with management and labor from the oil industry on May 13 to manifest a settlement.

UEW May Strike General Electric

General Electric Co. may be struck on or after May 15.

The company turned down a CIO-United Electrical Workers demand for a pay boost of 12 to 15 cents an hour, and the union refused an offer of 1.75 cents. GE based the 1.75 cents on the change in the cost-of-living index between Sept. 15, 1951, and Mar. 15, 1952. James Carey, president of the union, said negotiators for his organization would recommend strike action at GE plants when the UEW conference board meets May 14 if the situation is unchanged.

Capehart for Steel: Few Try It

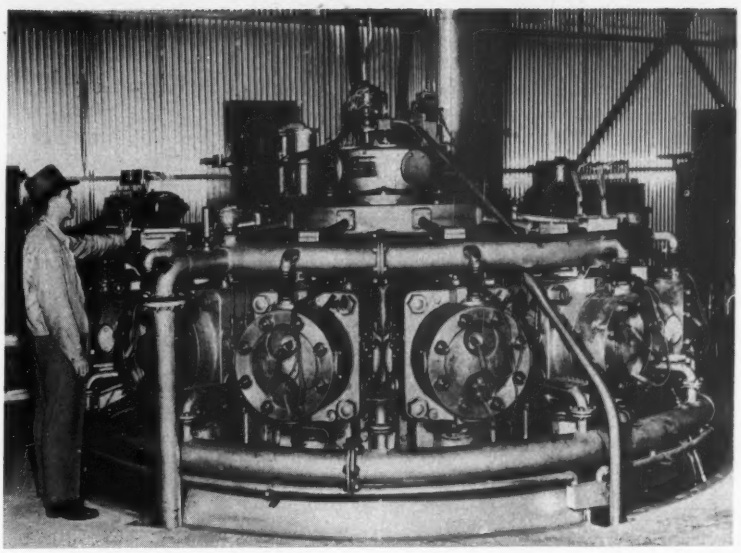
The major steel companies are not applying for price increases under the Capehart Amendment. But a few smaller steel firms or non-basic producers who come under the OPS formula for the steel industry are making applications for boosts.

Included among those applying for relief are: Pittsburgh Tube Co., Pittsburgh; Crown Cork & Seal Co., Baltimore; Sweet Steel Co., Williamsport, Pa.; and Taylor Forge & Pipe Co., Chicago. Under the Capehart Amendment as interpreted by OPS the average price increase permitted on carbon steel is $2.84 a ton; it's $3 a ton on other types.

Ohio River Steel To Expand

Ohio River Steel Corp., Toronto, O., received a certificate of necessity for accelerated tax amortization of a $18,724,940 expansion project. Defense Production Administration allowed a fast write-off on 55 per cent of this expenditure program.

This approval was included in a total of 205 new or expanded defense projects, involving proposed expenditure of $301,034,969, recorded from Apr. 11 to Apr. 17 by the agency.



Radial Engines Burn Natural Gas

Gas-fueled power generating facilities make possible a 70 per cent increase in aluminum smelting capacity at Aluminum Co. of America's Point Comfort, Tex., works. One of the world's largest internal combustion generating plants, its engines are rated at 350,000 horsepower. Built by Nordberg Mfg. Co., Milwaukee, they are two-cycle, 12-cylinder, dual-ignition types with 14-inch bore

Measure of Business: Inventories Shorten

Sales outlook and easing materials supply combine to remove the need for bigger-than-normal stocks of raw materials. Some firms are down to safe minimums

INVENTORIES are coming down.

A purchasing agent for an air conditioning equipment firm in Chicago speaks for manufacturers in general when he says, "With material supplies much improved and volume of business declining somewhat, it's just common sense to work closer to the belt."

Two Worries—"The only things we have to prepare ourselves against are a temporary shutdown on the part of our suppliers due to labor difficulty or the possibility with the coming of summer of a power shortage," says I. E. Walton, purchasing agent for Heppenstall Co., Pittsburgh.

It's impossible to generalize on the current level of all inventories. But, it can be said that manufacturers are back to normal buying or the lowest safe inventory on basic metals and components.

Post-Scare Buying—Manufacturers who usually work on a hand-to-mouth basis, buying materials only for firm orders, are back to that habit after having stockpiled three to four months of raw materials during the war-scare period. Manufacturers who carried 90 to 120-day inventories during the scare period are back to 30 to 60-day inventories or are planning to get there as soon as they can. They're shading it as close as they can to minimum requirements.

What's the safe minimum requirement? For one appliance maker it's 30 to 45 days. That firm has a high finished-product inventory and is concentrating on bringing it down. They can't shade their raw materials and components too much, since they feel they have to keep some work flowing through their plant to hold onto workers.

Pulling In Orders—An industrial heat-treating equipment maker says, "We're being conservative

—45 to 60 days. We've reduced the quantity on orders and in some cases cancelled orders entirely. Those were largely cases of imbalance. For instance, when motor starters were difficult to get, we placed orders as far as 8, 10 or 12 months ahead. Now, they're shipping starters months ahead of the time they've been scheduled and we're cancelling some of the orders that were way out. Also, we're going to have much less overtime."

Those unbalanced inventories are the biggest single headache purchasing agents have right now. A fastener manufacturer says, "We're beginning to build an inventory of small diameter steel bar stock, but when you get into ⅝, ¾ or ⅞-inch diameters, whether it be in hex or round, there just isn't any inventory of steel." A control and switch manufacturer comments, "We try to carry 45 to 60 day inventories. Right now, though, we've got our inventory built up with stuff we can't use until we get component parts to go with it. We're hoping in the next month or so to get out of that condition and cut the inventory down a little."

Inventories are long on semifinished steel, steel forgings and small diameter steel bars. Short inventories are noted in nickel-bearing alloys, copper wire mill products and a scattering of miscellaneous components.

Used Drums Are Slipping

Business of reconditioning steel drums was better when steel for new drums was short

BY WASHING, scraping, painting, drying, de-denting, shot-blasting, chaining or tumbling some 60 million used steel drums back to like-new condition, steel drum reconditioners are conserving 1.8 million tons of steel sheets a year.

Recently, the supply of used drums has eased. Steel supplies have become available for increased production of new drums. NPA order M-75 has been revoked; thus packers are no longer limited to 90 per cent of their base period usage of new drums, and deposits are not usually required any longer to insure return of drums to the original packer.

Modern Methods — But in the first emergency of the Korean War, packers and shippers looked hopefully to reconditoners as January, 1951, saw 2.8 million new drums being made against a 9.5 million drum backlog. They found a much more specialized reconditioning industry than in World War II, of automatic dryers, washers, de-denters, sprayers and shot-peening machines. That very mechanization has turned to plague reconditioners now that supply has overtaken demand.

There are some 200 firms engaged in reconditioning used steel drums, says the National Barrel & Drum Association Inc., Washington. In addition there are 55 to 100 captive shops capable of performing the same operations. Drums are used principally to transport petroleum products, chemicals, paints and food. Used drums can be employed wherever new drums are used (except for very special cases).

Fiber Finds Field—"Fiber is replacing steel to some extent, but it's not appreciable," says P. A. Perlman, president, Acme Barrel Co., Chicago. Fiber took some of the market in transporting dry, bulky material, such as soap, dry chemicals and powdered paint. One reason is the saving in shipping charges: A fiber drum in the 55 gallon weight size weighs about 20 pounds against 60 pounds for a steel drum in the same weight size.

As long as drums are made of steel, though, freight charges seem to assure the widely dispersed reconditioners a place in the nation's business. One new empty 55-gallon drum (the most common size, usually in 18 gage steel) costs $3.50 to ship from Des Moines to Detroit. From Detroit to Cleveland, the minimum charge for the same drum is $2.06. Fully reconditioned drums are now selling for $1.75 to $3.50 and can be shipped more cheaply.

Manufacturing Sales Soar in 1951, Profits Skid

PROFITS of U. S. manufacturing corporations after taxes were 12 per cent lower in 1951 than in 1950, say Securities & Exchange Commission and Federal Trade Commission.

Their report discloses that sales amounted to a record $212.2 billion in 1951 (see the table).

The Specific—Although the general profit after taxes declined 12 per cent, the different industry experiences vary widely. Nonferrous metal companies had an aggregate profit of $503 million after taxes in 1951, a 1 per cent gain over 1950. Basic steel, according to the government figures, had a profit of $906 million, or a 10 per cent decline. The after-taxes profit of fabricated metal companies was $545 million, 8 per cent below the 1950 level. Machinery (except electrical) manufacturers had a $1027 million profit, 1 per cent above 1950. Electrical machinery makers showed a profit of only $525 million, 21 per cent below 1950. In the transportation industry (excluding auto) after-profits taxes fell 3 per cent from 1950 to $187 million. The auto industry slipped 39 per cent with 1951 profit of only $922 million. After-taxes profits on instruments fell 19 per cent, to $161 million.

Total assets of manufacturing corporations at the end of 1951 are estimated at $144.8 billion, $18.5 billion higher than at the end of 1950. Inventories increased $8 billion over the year, while notes and accounts receivable increased $1.7 billion. At the end of the year, inventories were valued at $39.2 billion.

ALL MANUFACTURING CORPORATIONS

(Dollar amounts in billions)

	1947	1948	1949	1950	1951
Sales	$150.7	$165.6	$154.9	$181.9	$212.2
Costs	134.3	147.3	140.5	159.2	186.8
Net operating profit	16.4	18.3	14.3	22.7	25.4
Other income or deductions—net	.2	.1	.1	.6	.6
Net income before Fed. taxes	16.6	18.4	14.4	23.2	25.9
Provision for Fed. income taxes	6.4	6.9	5.4	10.4	14.6
Net income after taxes	10.1	11.5	9.0	12.9	11.4
Dividends	3.7	4.3	4.3	5.6	5.4
Profits after taxes per dollar of sales	6.7¢	7.0¢	5.8¢	7.1¢	5.4¢
Percentage rate of profit after taxes on stockholders' equity	15.6	16.0	11.6	15.4	12.2

Capital Goods: Boom and Bust Over?

New Production Policy Advisory Commission may help bring an end to fluctuating capital goods demand levels. Machine tool builders optimistic over long-range planning

SHOCK ABSORBER for the up and down riding capital goods producers could be the role of the newly-formed Production Policy Advisory Commission. Long-range planning for expansion of metalworking facilities in a balance determined by military and civilian needs will be one objective of the commission and may mean an end to the fluctuating demand levels which have plagued equipment builders since the first caveman had a surplus of clubs.

Clay Bedford, president of Chase Aircraft Corp. who recently resigned as expediter on the staff of the Secretary of Defense and is now a member of the new commission, first proposed the plan some time ago as a Machine Tool Commission (STEEL, Mar. 10, p. 77). Its sound principles and good election-year business implications appealed to the Truman polit-economists and Mr. Bedford's dream is reality.

What It Is—Headed by Harold Vance, Studebaker Corp. president, the Production Policy Advisory Commission will consist of top level representation from each of the military services and two additional members from industry. The group will advise the Secretary of Defense on long range production policy "aiming toward maximum production capacity for military and defense supporting activities at a minimum cost to the government," says Mr. Bedford. In addition it will review current schedules, production analyses and expediting procedures, and will recommend methods for curing production difficulties, including changes in policy if necessary.

The PPAC thus shapes up as a top-echelon bottleneck buster with the basic mission of getting machining, fabricating and processing facilities in balance with the expanding metals supply and keeping them there.

Toolbuilders Hopeful — Despite its ubiquitous title, the PPAC was originally conceived as an agency to help the machine tool builders. The industry sees hope that the new voice means the government is no longer going to treat it as just another highly vocal business group, that the relationship between tools and production is being recognized and that a planned, realistic program of high machine tool production lies ahead.

Already toolbuilders are becoming more cautions about letting subcontracts in the expectation that the catch-as-catch-can procurement will be replaced with a more extended program. (STEEL, May 5, p. 72).

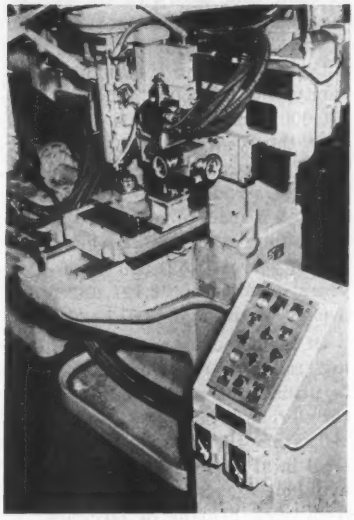
Drawing Together — There are other signs that the hodge-podge administration of machine tool needs are being drawn together. Recently the central inventory function of idle military-owned production equipment was placed in the hands of the National Production Authority. This action means that full control over the allocation of all machine tools—idle equipment owned by the government as well as the allocation authority over new tools and used equipment—is now in one place. This authority, coupled with information from the joint chiefs of staff on the relative priority of the various military programs should make possible proper distribution of tools and the elimination of artificial shortages.

Machine tool builders who need machine tools to make more machine tools themselves should benefit under this plan, and a realistic inventory should make long-range planning feasible.

Jackson Rehabilitates Plant

Jackson Iron & Steel Co., Jackson, O., is rehabilitating its steel plant in that city. The work being performed by Jay J. Seaver Engineers, Chicago, includes an iron ore unloading, storing, bedding and reclaiming system; turboblower pumps, condensers, turbogenerators and double skip bridge with electric bell rigs and electric hoist; a coke screening, weighing and breeze disposal system; a primary and secondary gas cleaning system; and fuel oil burners and water supply system.

Seaver recently completed the engineering for a turboblower installation for Tennessee Products & Chemical Corp. at its Rockwood, Tenn., plant.



Profile Follower

This hand profiler was converted to a hydraulic tracer by means of the Turchan follower attachment which controls traverse and cross feed to .002-inch. It can turn out work faster than the skilled operator that it relieves

Old Soldier

Bessemer screw machine stock is giving way to resulphurized open-hearth, electric steels

BESSEMER-produced steel bars for screw machine stock, for a long time a regular in the steel industry's army of products, now have something in common with an old soldier. They're fading away.

In several market areas bessemer grades of steel are disappearing as a result of abandonment of bessemer converters at the Johnstown, Pa., plant of Bethlehem Steel Co. and the Pittsburgh works of Jones & Laughlin Steel Corp. These abandonments didn't start the fading. They are just contributing further to it, for it start-

ed some time ago with the decline in usage of the bessemer process.

Shrinking—On Jan. 1, 1952, the nation's bessemer steelmaking capacity was 5,381,000 net tons, and 330,000 tons of that is to disappear this year with abandonment of two bessemer converters at East Chicago, Ind., by Youngstown Sheet & Tube Co. On Jan. 1, 1951, the country's bessemer steelmaking capacity was 5,621,000 tons. Ten years ago it was 6,721,400 tons; twenty years ago, 9,072,420 tons.

Of the bessemer capacity remaining today, a substantial portion is utilized in production of skelp for merchant pipe.

Taking the place of bessemer steel in areas where it is no longer available is resulphurized steel from open hearths or electrics.

Bessemer's forte is its machinability, imparted by the sulphur content of the steel. The bessemer converter does not take sulphur out of steel, but the open-hearth and electric steelmaking furnaces can. So, to give machinable qualities to open-hearth and electric furnace steel, sulphur in the right quantities is added, and you have resulphurized steel. Sellers of resulphurized steel for screw machine stock claim high advantages for it. At any rate, it is so nearly like bessemer steel that it is said only an expert can tell one from another. Some variations in prices between the bessemer and resulphurized grades are reported, with the latter usually slightly higher.

The Cause—Fading away of bessemer grades is not the result of a decline in demand for them. The change stems largely from plant layout considerations, bessemer converters not fitting into plans for revamping of facilities.

Like a true old soldier, bessemer grades of steel may be only fading away—not dying. Some producers say they have no thought of abandoning them.

A wide acceptance of resulphurized open-hearth and electric furnace steels may be a boon to producers and consumers. Steel companies which have not been in the bessemer business might find that production of resulphurized steel for screw machine stock would open a new sales vista for the time when keen business competition is returned.

ABCs of X-Ray Fluorescence Analysis

Operation of an x-ray fluorescence analysis unit is being explained to Thomas Moorman (center), Packard Motor Co., and Arnold Hubbard (right), Wyoming Bureau of Mines, by William Zaringo, Research & Control Instruments Division, North American Philips Co. Inc. Over 150 scientists and technical personnel attended the diffraction school held at the Philips plant in Mt. Vernon, N. Y.

Armored Vehicle Orders Herald More Subcontracting

ROLLING ONTO the industrial scene may be more subcontracting on orders for tanks and armoured vehicles.

At present, large orders for the combat vehicles are going to prime defense contractors. And signs indicate awards for tanks may increase in the near future. An example of the present step-up in demand, is the report that Army Ordnance has tripled its order with Ford Motor Co. for T-48 medium tanks. This contract is valued at more than $300 million.

While new orders are going to manufacturers, deliveries on tank equipment are speeding up. Chrysler Corp. announces that it has shipped the first car load of tank engines to the armed forces from the Michoud Ordnance plant near New Orleans. Also, hulls for the new M-47 tank are coming off the assembly lines of Carrier Corp.'s plant at Syracuse, N. Y.

See the accompanying table for selected metalworking contracts awarded by the government. Each is valued at over $250,000.

PRODUCT	CONTRACTOR
Milling Machines	Cincinnati Milling Machine Co., Cincinnati
Turret Lathes	Bullard Co., Bridgeport, Conn.
Trucks, 2½ Ton	Studebaker Corp., South Bend, Ind.
Motor Vehicle Parts	International Harvester Co., Chicago
	Fontaine Truck Equipment Co., Birmingham
Fork Trucks	Clark Equipment Co., Battle Creek, Mich.
Straddle Trucks	Ross Carrier Co., Benton Harbor, Mich.
Electric Crane Trucks	Yale & Towne Mfg. Co., New York
Tractors, Warehouse	Clark Equipment Co., Battle Creek, Mich.
Tractors	Caterpillar Tractor Co., Peoria, Ill.
Parts for Tractors	M.R.S. Mfg. Co., Flora, Miss.
Shells, 57 mm	Traubee Products Inc., Brooklyn, N. Y.
Projectiles, 20 mm	Automatic Pencil Sharpener Co. Div., Spengler-Loomis Mfg. Co., Rockford, Ill.
Rifles, 57 mm	Sunbeam Corp., Chicago
Parts for Rifles	C. Cowles & Co., New Haven, Conn.
Ammunition Cans	Continental Can Co. Inc., New York
Cartridges, cal. 22	Remington Arms Co. Inc., Bridgeport, Conn.
Cartridge Cases	Globe American Corp., Kokomo, Ind.
Cups, cal. 30	Bridgeport Brass Co., Bridgeport, Conn.
Aircraft Parts	Standard Steel Works, N. Kansas City, Mo.
Indicators	Blackstone Mfg. Co., Chicago
Voltage Regulators	Western Electric Co., New York
Wheel & Brake Assemblies	Bendix Aviation Corp., South Bend, Ind.
Intercommunication Sets	RCA Victor Div., Radio Corp. of America, New York
Electron Tubes	Sylvania Electric Products Inc., New York
Crystal Units	P. R. Hoffman Co., Carlisle, Pa.
Metal Swivel Chairs	Emeco Corp., Hanover, Pa.
Pontoons	Dayville Mfg. Co., Dayville, Conn.

CHECKLIST ON CONTROLS

GOVERNMENT control orders are digested or listed each week in this "Checklist on Controls." For complete copies of NPA orders, write to NPA Distribution Section, First Basement, New GAO Bldg., Washington 25. For copies of OPS orders, contact nearest OPS district or regional office. For copies of OPS news releases, write David S. Phillips, director, OPS Administrative Services Division, Temporary E Bldg., Washington 25.

Materials Orders

SEBACIC ACID — NPA Order M-45, which provided government allocation controls over sebacic acid, was revoked Apr. 30, 1952.

COLUMBIUM, TANTALUM—Amendment of May 2, 1952, of Schedule 5 to NPA Order M-80 permits users of low carbon austenitic stainless steels or austenitic steels stabilized with columbium, tantalum or titanium to employ columbium-bearing welding rods for welding such steel. It was effective May 2.

COMMUNICATIONS—Amendment of May 6, 1952, of NPA Order M-77 gives the telephone and telegraph industries broader assistance in obtaining materials for maintenance, repairs, and operation and for essential construction. The amendment was effective May 6.

COBALT—Amendment of May 7, 1952, of Schedule 2 to NPA Order M-80 and amendment of May 7, 1952, of NPA Order M-80 are to conserve cobalt further by including compounds produced from ores, metal, concentrates and refinery residues in the definition of cobalt. Both were effective May 7.

FLOOD RELIEF—Direction 2 to NPA Order M-6A increases allotments of certain steel products which producers are required to deliver to distributors in the flood disaster areas. Direction 1 to NPA Order M-89 increases the amounts of controlled materials that can be procured with priority ratings in May and June by retailers in the flood disaster areas. Both directions were issued May 7, 1952, and made effective that date.

Controlled Materials Plan

SELF-AUTHORIZATION — Amendment of Apr. 30, 1952, of Direction 1 to CMP Regulation 1 provides a liberalized self-authorization procedure that will permit certain manufacturers to obtain substantially increased quantities of carbon steel, alloy steel and aluminum, beginning third quarter, 1952.

WELL DRILLING — Amendment of May 6, 1952, of Direction 4 to Revised CMP Regulation 6 raises, from six tons to ten tons of carbon steel, the dividing line betwen two methods of applying for allotments of controlled materials for water well-drilling. The amendment was effective May 6.

NPA Regulation

ELECTRONIC COMPONENTS—Amendment of Apr. 30, 1952, of Direction 4 to NPA Regulation 2 permits certain additional types of electronic components to be delivered on rated orders in small quantities to laboratories and research organizations for experimental and development purposes. The amendment was effective Apr. 30, 1952.

The I-Beams Have It

Four fillet welds are used to join three steel sections that form an I-beam at the Maryland Dry Dock Co. in Baltimore. The beams, which weigh 9 tons each and are 62 feet long, will be used in a Pennsylvania railroad bridge

Price Regulations

STEEL PRICES—Supplementary Regulation 100 to the General Ceiling Price Regulation makes it possible for the iron and steel industry to take a price increase under the Capehart amendment to the Defense Production Act. The average increase permitted is $2.84 a ton. SR 100 was issued Apr. 25, 1952, and made effective May 1, 1952.

DIE CASTINGS — Amendment 6 of Ceiling Price Regulation 60 authorizes an increase of 4 per cent in ceiling prices previously established by die castings producers under CPR 60. Amendment 6 was issued Apr. 29, 1952, and made effective on that date.

MANUFACTURERS' PRICES — Amendment 2 of the revised Supplementary Regulation 2 to Ceiling Price Regulation 22 extends to manufacturers who use the alternative method for determining ceiling prices under revised Supplementary Regulation 2 to CPR 22 the same option of retaining General Ceiling Price Regulation ceiling prices where the change in ceiling price is less than 1 per cent, that is afforded to other manufacturers in section 26 of CPR 22. Amendment 2 was issued May 1, 1952, and made effective May 6.

MACHINERY PRICING—Amendment 2 of revised Supplementary Regulation 1 to Ceiling Price Regulation 30 extends to manufacturers who use the alternative method for determining ceiling prices under revised Supplementary Regulation 1 to CPR 30 the same option of retaining General Ceiling Price Regulation ceiling prices where the change in ceiling price is less than 1 per cent, that is afforded to other manufacturers in section 29 of CPR 30. Amendment 2 was issued May 1, 1952, and made effective May 6.

BRASS, BRONZE—Amendment 1 to Ceiling Price Regulation 127 permits a seller of brass and bronze ingots, who delivers such ingots long distances in his own vehicle, to make a transportation charge for delivery. Amendment 1, issued May 5, 1952, was effective May 10.

HARDWOOD CHARCOAL — Supplementary Regulation 101 to the General Ceiling Price Regulation authorizes a 10 per cent increase in producers' ceiling prices for hardwood charcoal. SR 101 was issued May 5, 1952, and made effective May 10.

PRICE ADJUSTMENTS—Revision 1 of General Overriding Regulation 18 provides a procedure under which sellers held in violation of the Sherman or Clayton antitrust laws may adjust their ceiling prices into conformity with federal judgments or decrees. Revision 1 was made May 7, 1952, effective May 12.

Foreign Heavy Castings Aid?

Some of the very large castings needed for the Air Force heavy press program will be made in Europe if a special team of specialists can find the proper facilities. The team, which left for Europe in the first week of May, has information that such facilities may be found in France and Germany.

Only a relatively few firms in the U. S. can make such large castings, and their order books are already filled with important defense work. The European foundries not only can benefit the defense effort directly, but also their use will avoid any delaying interference with the work being done in American shops.

Appointments in Washington

Dr. William Lee Davidson, formerly director of physical research, B. F. Goodrich Co., Akron, heads a new Office of Industrial Development established by the Atomic Energy Commission. He is to expand industrial interest in the atomic energy program, and particularly encourage studies of atomic power generation by private companies.

Stuart D. Baker, of the J. I. Case Co., Racine, Wis., was named chief, Tillage Tools Branch, Agricultural Machinery & Implements Division, National Production Authority.

John H. Flagg, of the Watson-Flagg Machine Co., Paterson, N. J., was named director, General Components Division, National Production Authority.

John C. Clay, on leave as assistant to the executive vice president of National Starch Products Inc., New York, was appointed director of Containers & Packaging Division, Chemical, Rubber and Forest Products Bureau, National Production Authority.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Moral of the steel impasse: If you have labor troubles, stay away from Washington. Drastic legislation in an election year would be a distasteful chore for Congress

PRIME LESSON to be learned from the steel impasse: Keep your labor troubles away from Washington if at all possible. Settle them at home. You are likely to get a much better break than you could expect from Washington.

That is advice to STEEL's readers from a distinguished specialist who has held top government posts in labor - management disputes. From the government, he says, you are sure to get a decision which will favor labor to the maximum extent allowed under statute.

Status Quo Is Woe—This situation could be changed, of course, if Congress could make up its mind to enact a real labor law. But the same timorousness that pulled one tooth after another from the original Taft-Hartley bill continues, especially in this election year.

Congress is not in a mood to pass drastic labor legislation. It hopes that the steel and oil strikes will be settled by the President—though recent court decisions do not encourage such an expectation. Only if another walkout takes place—possibly after the Supreme Court acts on Judge Pine's decision—could Congress be expected to tackle such a distasteful chore.

In the Works—A number of bills have been introduced or written. Chief one, offered as an amendment to the Selective Service Act by Rep. Smith of Virginia to dodge the two labor committees, calls for operation of struck defense plants under a federal receiver with work stoppages illegal.

The Morse bill would authorize the President to seize a struck industry but would impound the struck company's profits.

And Furthermore — Two bills now being written would outlaw industry-wide, union-wide bargaining. These will not be greeted enthusiastically by industry—for no manager wants to see his own plant idled by a strike while his competitors continue to operate.

CINCH FOR A PINCH
. . . keep your labor troubles at home

To get a drastic labor bill passed, a coalition of southern Democrats and Republicans would be necessary. So far Republicans have been hesitant on this subject, except to point out that the President, without calling on Congress for help, has demonstrated how not to settle a steel strike.

Regulation W: By the Boards . . .

The long-rumored relaxation of FRB's famed Regulation W wasn't expected until after a steel settlement. Pressure for similar treatment for Regulation X, which controls housing credit, will mount. Action on this regulation soon is unlikely; the boom in homebuilding continues despite curbs. The government hopes deferred housing demand will prop up business after heavy defense spending wanes.

Penny Wise, Pound Foolish . . .

Unfortunate experience of a couple of Army castings procurement officers at the International Foundry Congress and Show in Atlantic City may provide food for thought.

On the basis of rank, one of them was authorized to charge expenses up to $9 and the other up to $7 a day. When they arrived, they found that the registration fees were $5 each to visit the show and $2 each to attend the meetings. Their expenses came to something like this: $7 each for fees, $16 a day each for hotel quarters, plus an indefinite amount for food.

They did wangle free tickets to the exposition and took a quick trip through the show. Then they threw up their hands and took an early train back to Washington.

Legislated Efficiency . . .

Following extended study, the House Armed Services Committee has reported a bill that would force the armed services by statute to: Procure under a single supply cataloging system, standardize supplies, and institute "more efficient use of supply testing, inspection, and acceptance facilities and services."

Bureaus Still Growing . . .

The number of civilian employees of the government continues to grow. Entering April, it stood at 2,539,045—an increase of 8154 in one month. Units taking on more employees are Post Office, Agriculture, Treasury, Defense and Economic Stabilization Agency.

Don't Tote That Bale . . .

More sales ammunition for materials handling equipment manufacturers comes from Agriculture's Production and Marketing Administration. In unloading cotton from motor trucks at ground level, two clamp-type lift trucks can accomplish as much as six men using hand trucks—and in half the time. The same savings are possible in all other bale-handling operations. The weighing problem is simplified by using a mobile beam scale that can be wheeled over a row of bales.

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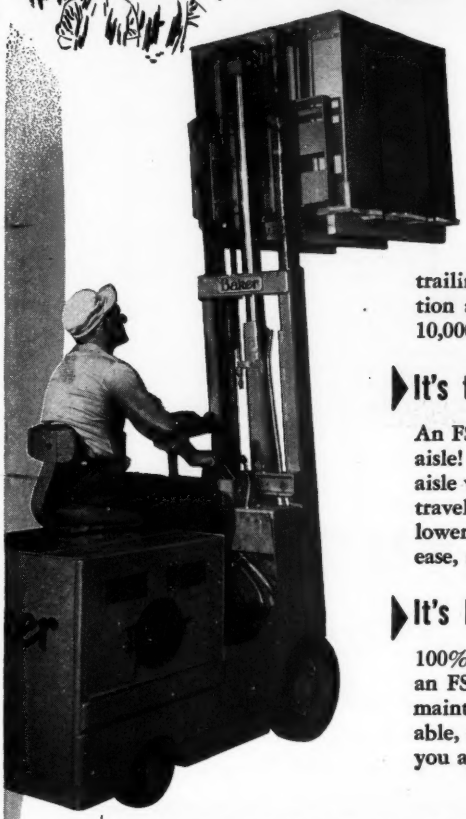

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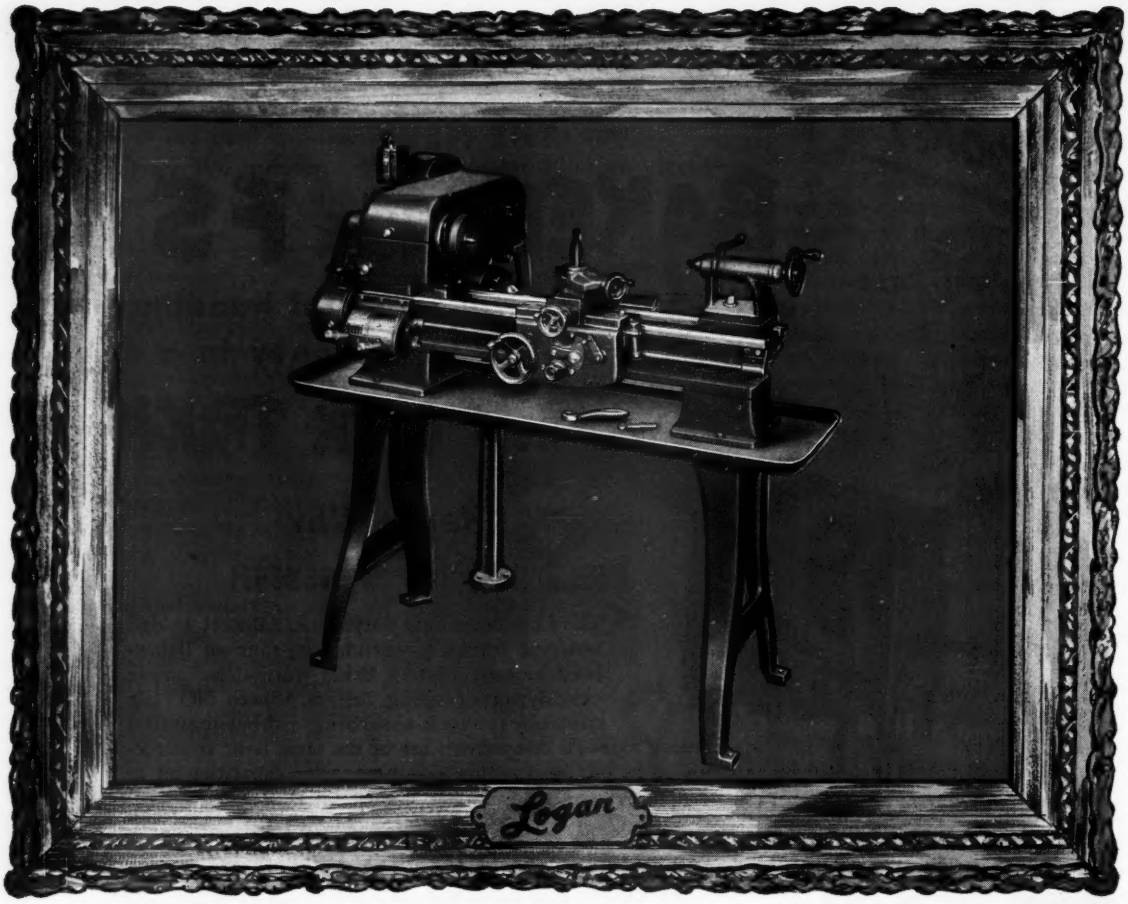

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British Transport Pulls Ahead of Steel

The green light for return to private control is due to be given to British transportation industry ahead of the steel industry as the outlook for the latter gets no better

DENATIONALIZATION of steel by the British government is now likely to be postponed in favor of denationalization of the transport industry.

Both projects are destined to be carried through during the present Parliamentary session, but political opinion is running strongly toward dealing with the transport problem first. That tendency results from agitation against the steel deal by British trade unions and the desire to establish precedence and procedures for denationalizing the steel industry with an industry where there's less heated emotion in the matter.

Hefty Haulage—The task of returning transport to private enterprise involves the transfer under a finance trust of some £80 million in road haulage assets. A work force of more than 70,000 persons will also have to be taken over again by private concerns. It now appears that this process may be spread over three or four years, assuming that the former owners would be willing to re-enter the industry.

Further distraction from denationalization of steel is offered by the latest economic survey for 1952 by the British government which indicates the steel shortage will continue throughout the year. Imports of steel are increasing, though the rerolling industry is still very short of billets. In March, 1952, total iron and steel imports were 144,947 tons compared with 54,636 tons in March, 1951. Imports of pig iron, steel ingots and bars and rods have increased, but the tonnage of billets purchased this March was actually less than the total bought a year ago. That lack of billets is causing unemployment and short working time in the rerolling trade.

Trickle Across the Sea — Small consignments of steel have reached Britain from the U. S., but British users hope the flow will increase by June. If the U. S. steel strikes should hamper production to the point where exports to Britain are cut, it will have serious repercussions on British industry.

U.S. Tools Build U.K. Tanks

American machine tools are helping to turn out Britain's 50-ton Centurion tanks. One vital point at which American machine tools are being used is in the manufacture of Centurion tank engines (developed models of the World War II Rolls Royce Merlin engine). Six American machine tools occupied important places in the assembly line at Rover Motor Car Co., Birmingham, which makes the engines. Three of these have now been assigned to another firm beginning to make the tank engines.

Some 70 more tools, costing about $750,000, are due to arrive under the Mutual Security Program later this year. Examples of the American machines in use or due to arrive are Moline multi-spindle borers and Keller die sinking machines.

Also due to be installed in the next few months is $115,000 worth of special American equipment for the Dunlop Rim & Wheel Co., which produces steel bands for the wheels and top rollers of the tank. The American equipment will use the "Tocco" process to increase the hardness of steel by high frequency induction.

Importance of the American equipment in the Rover and Dunlop plants is seen in the fact that Britain doubled her tank production between 1950 and 1951 and again between 1951 and 1952. In 1952-53 about one-fifth of all British defense expenditures will go into tanks and other vehicles.

Egypt Orders German Steel Mill

The Egyptian government placed an order with Dr. Walter Rohland, World War II head of German tank production, for a steel mill with an annual capacity of 160,000 tons; total cost—£18 million.

Wide World

Italians' Speed Jet

Fiat G-80 is first of three new Italian jet aircraft types powered by British engines. To be used later in training, the G-80 has a 500 mph top speed, 900 mile range, climbs to 28,000 feet in 8 minutes with 45,000 foot ceiling

U.S. Helps in New Dutch Mill

Operations of the new slabbing and blooming mill of the Royal Dutch Blast Furnace & Steel Co., Ijmuiden, Netherlands, will increase the steel rolling capacity of the western world by almost 500,000 tons a year. The new unit, first part of an expansion program being aided by U. S. financing, was completed and opened on Apr. 1, after two years of planning.

Major items purchased for the project by the Dutch from U. S. firms, and financed by ECA-MSA, are: From United Engineering and Foundry Co., Pittsburgh—a hot mill finishing train, a tandem cold mill and a temper pass mill, $5,012,161; from International General Electric Co., New York—electrical equipment, motors, etc., $4,125,819; from Wean Engineering Co., Warren, O.—pickling, electrolytic cleaning line and shearing lines, $1,611,748; from Continental Foundry & Machinery Co., Pittsburgh — equipment engineering services, $1,157,600 and from Aetna Standard Engineering Co., Youngstown—various items of steel mill equipment and engineering services, $500,820.

Synthetic Gasoline If—

Question is not possibility or quality, but does the cost make synthetic gasoline competitive?

A DISCREPANCY in estimates of final cost of producing synthetic gasoline through coal hydrogenation is one factor limiting a potentially large market for metal equipment.

The National Petroleum Council says gasoline produced by the process would cost 41.4 cents a gallon; it bases that conclusion on its $400,000 research job on the subject. The Bureau of Mines originally estimated a cost of 12 cents a gallon; now, armed with its extensive Ebasco report, it places the figure at 11 cents a gallon. Until the true cost can be determined, coal hydrogenation is stalled, as are sales of equipment for the process.

Not "Ersatz" — Synthetic gasoline is not an inferior substitute for today's fuels and it's not a miracle substance. It's simply a gasoline refined by the familiar processes from crude oil—but the crude oil is derived from coal or oil shale.

The major processes—coal hydrogenation, coal gasification and extraction of crude oil from shale —are not new. The oil-from-shale industry, for example, was just getting on its feet in this country a hundred years ago when the modern petroleum industry was born. Shale couldn't meet the competition and business died out. Now there are signs that shale-produced oil may become competitive again.

Of greatest significance to equipment manufacturers is the coal hydrogenation process. The Bureau of Mines is pushing for coal-derived gasoline production right now. The National Petroleum Council says it isn't economically feasible.

Report "Retort"—To garner ammunition, the Bureau of Mines contracted Ebasco Services Inc. last September to explore the picture. Ebasco's report, recently completed, maintains that gasoline can be produced at 11 cents a gallon, based on Jan. 1, 1951, costs.

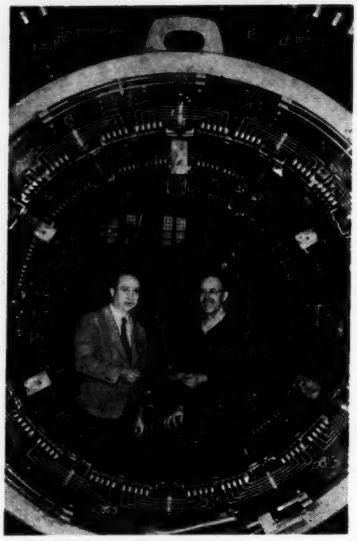
But Ebasco flatly reported, "we do not believe it would be feasible to finance the projects . . . with private capital under conditions prevailing at Jan. 1, 1951." Reason: The three-to-four-year delay from the start of construction to the beginning of operations with no assurance of a higher rate of return in exchange for waiting.

Ebasco's estimate of cost for a single plant installation was even less than the bureau estimate which in turn was $121 million less than the best guess of the oil industry experts, basis of the 41-cent-a-gallon figure.

Economic Proposition—Although somewhat obscured by the charges and counter-charges of accountants and engineers, the fundamental issue is clear.

The raw materials, the techniques for mining them and the process for turning them into conventional liquid fuels are all available. Can they be sold with any hope of competing favorably and profitably?

Equipment makers await the answer to that question.



Wheel of Fortune

This motor-generator stator, resembling a gigantic roulette wheel, paid off for a General Electric employee to the tune of $1030. His system: A suggestion to improve insulation under the company's suggestion award plan

Heating Units May Get Scarce

Shortage of domestic heating units to support the high level of construction is predicted by heating men. They point out that while present inventories are high, the condition is normal for this time of year. Current material allotments are not adequate to meet the demand of 950,000 to 1 million new homes generally expected to be started in 1952.

Reactor Power Looming Closer

Reactor powered generating stations may be in operation within the next five to ten years on an economically feasible basis, says Atomic Energy Commissioner, T. Keith Glennan. Already being produced experimentally, commercial production of electricity awaits reactor cost reduction through research.

The AEC feels that this research will result in economic feasibility in the not-too-distant future. Dow Chemical Co. and Detroit Edison Co. have decided the prospects of atomic power are sufficiently promising to submit a proposal for extended research following their preliminary work (STEEL, Apr. 14, 1952, p. 75). Other firms doing preliminary work now are expected to submit proposals for further research soon, and proposals for preliminary research by new firms are being solicited.

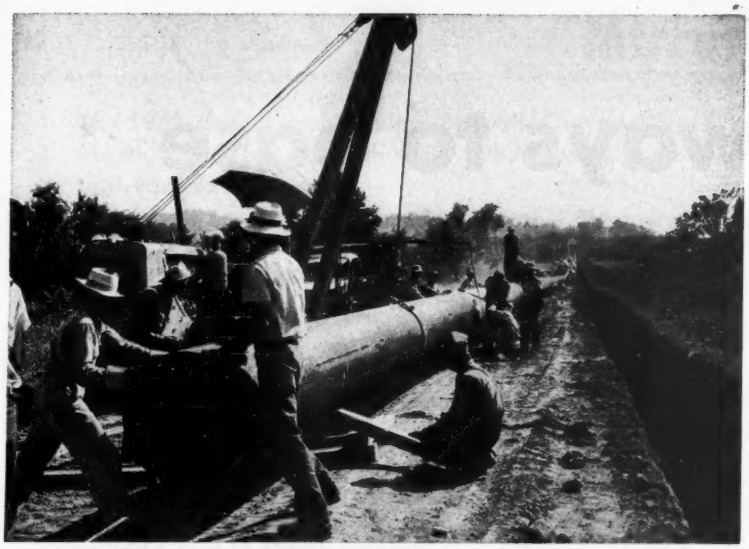
Youngstown Firm Installs Press

Aluminum Air Seal Mfg. Co., Youngstown, installed a 2500-ton extrusion press, one of the largest in the Youngstown aluminum industry. Designed by the Lombard Corp. and built by United Engineering & Foundry Co., the unit will produce extrusions for about 34 plants which produce anodized aluminum storm doors and windows.

The new press, a horizontal direct-action type, weighs 112.6 tons and is equipped with a 5-inch ram. It cost $250,000.

Die Casters Get Price Increase

Die casters were granted a 4 per cent price increase over ceilings established under Ceiling Price Regulation 60. The action will allow producers a return equal to the OPS earnings standard of 85% of the best three years, 1946-1949.



WORKMEN WELD ANOTHER SECTION ON A GROWING PIPELINE
. . . this year should see record gas and oil line construction

Pipeline Builders See Record Year

Bottleneck in pipelines construction has been the shortage of steel for line pipe. With an increased supply anticipated, pipeliners and field operators step up their tempo

TEN THOUSAND miles of oil pipeline alone will be constructed in 1952 barring unforeseen circumstances. The length, greatest single-year goal in history, is in marked contrast to 1951 when only 2866 miles were completed and to the postwar yearly average of 3825 miles.

Key Is Steel—Chief obstacle to construction of oil and gas pipelines has been the shortage of plate steel for line pipe. The expanded program for 1952 has been approved by the Petroleum Administration for Defense in anticipation of adequate material. Allocations for the third quarter total 227,285 tons of line for new oil pipeline construction with 44,466 more tons allocated for small construction, maintenance and repair operations.

Total requirements of line pipe thus far for the remainder of the year are 343,117 tons for crude lines and 184,729 tons for product lines; a total of 527,846 tons. Total cost of the projects will be in excess of $193 million.

Largest oil pipeline project: A $59 million pipeline from Wyoming to Illinois to be built by the Platte Pipe Line Co., 70,000 B/D capacity.

Gas Hot, Too—Also to benefit from the prospect of more steel will be the natural gas pipeliners. Six major natural gas pipeline projects with a total estimated cost of $215 million were cleared for third quarter, 1952, as well as a number of smaller projects. Total pipe for gas lines allocated for the quarter to date is 384,400 tons. With the majority of the larger projects scheduled for completion in the fourth quarter, heavy allotments are also probable for that period.

Largest natural gas project: A $60 million line for El Paso Natural Gas Co. to provide additional gas for California.

Wildcats, Now Emergencies—Allocations of tubular goods among oil and gas field operators are being shifted in accordance with the materials situation, too. Basis of the changes is a new system under which the tonnage available to the field supply stores will be increased from about 30,000 tons in the second quarter to 45,000 tons in the third quarter.

These increased stocks make possible opening them to operators who drill 19 or fewer wells a year. Formerly, they were open to those drilling only eight or less wells annually with the larger operator dependent on mill shipments which were difficult for them to obtain.

The order of priorities for obtaining the field stocks will remain the same: Wildcat well, extension well, offset well and drilling obligation well. But, wildcatting took all the field stocks before and the increased allocation should now make possible supplies for the lower priority emergency drillers.

Decontrol for Steel Seconds

Second-quality carbon steel will be removed from the list of controlled materials for the fourth quarter of 1952, NPA advises.

Seconds are defined as "any item of rejected or carbon steel shearing or second-quality steel which is usually sold by a producer at a stated lower price than such items of prime steel excluding ingots, blooms, slabs, billets, sheet bars, wire rods and other semifinished shapes." The order will be formalized shortly with an amendment to CMP Regulation No. 1.

About 800,000 tons of second-quality carbon steel will be freed each quarter under the ruling, NPA estimates.

The major source of the material is flat-rolled products such as shearings from sheet and strip mills. Major users are manufacturers of washers, toys and similar products.

Fabricators Ask for Decontrol

The "rapidly improving supply-demand situation" warrants the elimination of controls over structural steel at the earliest time consistent with the safety of the defense program, the Structural Steel Fabricators Industry Advisory Committee told NPA.

The committee also recommended that CMP regulations be changed to allow automatic revalidation of controlled material allotment tickets which cannot be cashed in a given quarter, permitting the holder to apply them on a mill order the next quarter.

NPA told the committee that individual requests for extention of the inventory limitation period will be granted.

2 ways to ease your Steel Shortage

1 Collect all dormant Steel Scrap and get it to the steel producers

Millions of tons of valuable scrap still lie idle in America. Scrap salvage means more production—a stronger America. Clean out your plant . . . sell all your iron and steel scrap to your local scrap dealer now. The need is urgent. Every bit will help to meet the needs of defense production.

2 Make your steel supply go farther —specify N-A-X HIGH-TENSILE STEEL

Users of N-A-X HIGH-TENSILE steel find they can make 3 tons do the work of 4. Through its high strength and corrosion-resistant properties, lighter sections can be used without sacrifice of quality. It fabricates and welds with the ease of mild carbon steel. Let us assist you in applying this economy to your products.

GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division — Ecorse, Detroit 29, Mich.

NATIONAL STEEL CORPORATION

By H. C. TUTTLE *Detroit Editor*

Mirrors of Motordom

The 1952 models aren't doing too well. Chevrolet and Plymouth may come out with early 1953 models to catch up with Ford and spur sales

DETROIT

IN THE AUTOMOTIVE industry the future and the present interlock so tightly that some of those on the inside have difficulty realizing that current models are 1952s, not 1953s or '54s.

This is not true of the sales chiefs. Their problems are here and now. And the product they have to push does not have the innovations which the boys on the drawing boards and in the experimental garages work with daily.

Drastic Measures—The state of the new car market has to be reckoned with, and for nine out of ten makers it leaves plenty of room for improvement. One drastic solution presents itself—cut the 1952 model run short, and bring out new models ahead of time. If the strong rumors surging through the trade can be believed this will be done by two of the largest volume producers—Chevrolet and Plymouth.

The exact timetable is not ascertainable, neither is it possible to get an admission from these carmakers that their new models will appear in showrooms ahead of the usual time. But the talk is that a new Plymouth, importantly changed in appearance, will be introduced in mid-summer. And Chevrolet, completely restyled, is predicted for October.

Changed Plans — Nineteen-fifty-two is not working out according to plan. It was to have been a year when the carmakers could sell all the cars the government permitted them to build. There was going to be plenty of money at hand, and the urge to buy was going to be so strong that there was little need for major changes. There is still a chance that the car market will heat up, but it appears as a remote one, the hottest flash to come if and when credit restrictions are loosened or removed.

There is another equally drastic solution to the car selling problem. That is to cut prices. You find this being done in a number of ways. There is the outright cut such as Kaiser-Frazer made on the Henry J. There is the long trade-in allowance. There is the elimination of frills and the "hard sell" of the standard model.

Advice — Harry J. Klinger, GM vice president, offered some words of advice to the Automobile Merchants Association of New York last week along these lines. Foremost is that "profit making is a management function—not an economic circumstance." He believes "We are passing out of a period of 'pull' into a period of 'push' selling. For years the desirability of our product has pulled customers into the dealership. From now on it looks as though we are going to have to start pushing the product more to maintain sales volume."

Aware that dealers everywhere are prone to blame some of their sales problems on the men who designed and built the present models, Mr. Klinger offers two reasons why hot new ideas are slow in coming:

"It would be folly for any manufacturer to incorporate anything into production models until all the bugs are out of it." And "Customers don't want their surprises to be too startling. Radical, revolutionary, overnight innovations in automobiles make large numbers of customers a little bit gunshy or scare them out of the market completely."

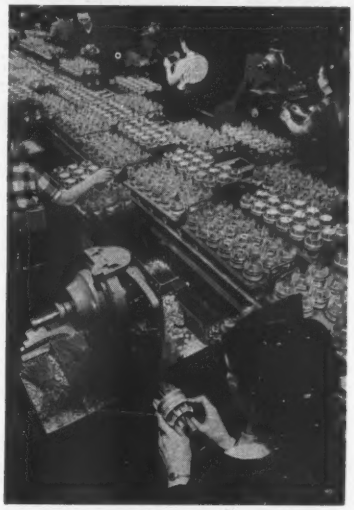
Alcoa Bids for Auto Jobs

Probably the leariness of customers to radical change holds true for the automakers themselves. A trio of Aluminum Co. of America men explained to Detroit members of the Society of Automotive Engineers on Monday how aluminum might fit into the car-of-tomorrow.

There was no mention made of an all-aluminum car and the subject of aluminum body panels was only briefly touched upon and discarded from consideration for all but the most expensive cars. And even in these only such body parts as doors, hood and trunk lids were suggested as possible aluminum applications in the somewhat remote future.

Frank Jardine, Alcoa's development division manager, however, is acutely aware of potential nearby uses of aluminum passenger cars. In 1950, he said, the passenger car industry used only as much aluminum as the cooking utensil producers—6 per cent of consumption.

Twice this percentage was used by the other forms of transportation. It is his belief that passenger cars can conceivably contain 214.3 pounds of aluminum per unit by 1954. This is not an off-the-top-of-the-head figure. Automotive sources say that Alcoa has had top design and production engineers in from each of the major companies for the purpose of compiling fig-



Oldsmobile Rockets Ahead

Tail assemblies of the 3.5-inch superbazooka rocket are being riveted and welded by these workers at the Oldsmobile Division, General Motors Corp., in Lansing, Mich. The plant formerly produced auto engines

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ures on feasible aluminum usage in 1954 models. It is reportedly their composite figures which lead Alcoa to the 214.3 pound estimate. It does not assume that all makers will be using aluminum engines, radiators, trim, etc. It takes into account only those who might.

Places where big boosts in aluminum consumption undoubtedly will come are those for which the metal already has proved itself, in the torque converter for example. In the now-experimental realm, which Mr. Jardine expects sooner or later will become production reality, are aluminum radiators, engines and important components. Kaiser Aluminum & Chemical Sales Inc. is now offering electrical cable for automotive use, and Mr. Jardine's figures show aluminum wiring feasibly regarded by the automakers.

In his presentation the metal's lightness was not even mentioned as a reason for adoption in passenger cars. The advantages he claims, in the case of the brazed-section heads and crankcases, derive principally from the use of permanent molds and die casting, which eliminate the intricate coring necessary to gray iron engine block manufacture and cut down the amount of machining needed. Price, he believes, will be competitive with iron.

GM Plans New York Show

General Motors will stage another extravaganza at the Waldorf-Astoria in New York early next year, according to the scuttlebutt. The last time the corporation had such an affair was in January of 1950, when the hullabaloo closely approached that of an industry-wide national auto show.

One of the big attractions will be the 1953 Buick, judging from the advance word about this car which is filtering through the metalworking trade. An overhead-valve V-8 engine may make its appearance in the Roadmaster series, the Super and Special basking in the larger model's glory until output of the new engine can accommodate their volume. Both Chevrolet and Pontiac will put completely new faces forward, but both, it is now believed, will find it impossible to bring out in 1953 the new engines they're working on.

Auto, Truck Output

U. S. and Canada

	1952	1951
January	409,406	645,688
February	467,692	658,918
March	517,206	792,550
April	566,600*	680,281
May	.....	695,898
June	.....	653,682
July	.....	522,858
August	.....	571,442
September	.....	505,758
October	.....	558,971
November	.....	480,199
December	.....	402,729
Total	.....	7,179,161
Week Ended	1952	1951
April 5	125,668	158,076
April 12	123,180	162,839
April 19	131,657	166,502
April 26	135,769	162,740
May 3	130,108	154,623
May 10	132,000*	180,577

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary.

Research Plant Takes Shape

While the GM sales section gets its plans whipped into shape for the Waldorf-Astoria shindig, the research laboratories division of the corporation will be bringing closer to completion its portion of the fabulous technical center at Mound and Twelve Mile roads north of Detroit. Ground has now been broken for the main research building, the last of six structures in the laboratories' group. This three-story building, measuring 690 x 55 feet, will house engineering, chemistry and physics laboratories, executive offices, auditorium and technical library. On the main floor will be an exhibit room.

Near completion in the group is the metallurgy building which houses the experimental foundry. Under construction are the mechanical building, containing engine test cells, the fuel blending building, the processing building, in which new fabricating and machining techniques will be tried, and the turbine test building.

GM, Chrysler Men Move Up

General Motors Corp. and Chrysler Corp. are still making news with their announcement of top-level appointments. At Chrysler John P. Mansfield has been elected president of Plymouth Division, succeeding D. S. Eddins, retired. Mr. Mansfield, a 32-year veteran of the automotive industry who began his career with Dort Motor Co. in Flint, joined Dodge in 1932, serving in field capacities with that division for 10 years.

Subsequent to this he became regional manager in Kansas City, then Los Angeles, and in 1947 was made general manager of the San Leandro, Calif., Dodge-Plymouth plant. Elected vice president and a board member of Plymouth, he returned to Detroit headquarters in January, 1951.

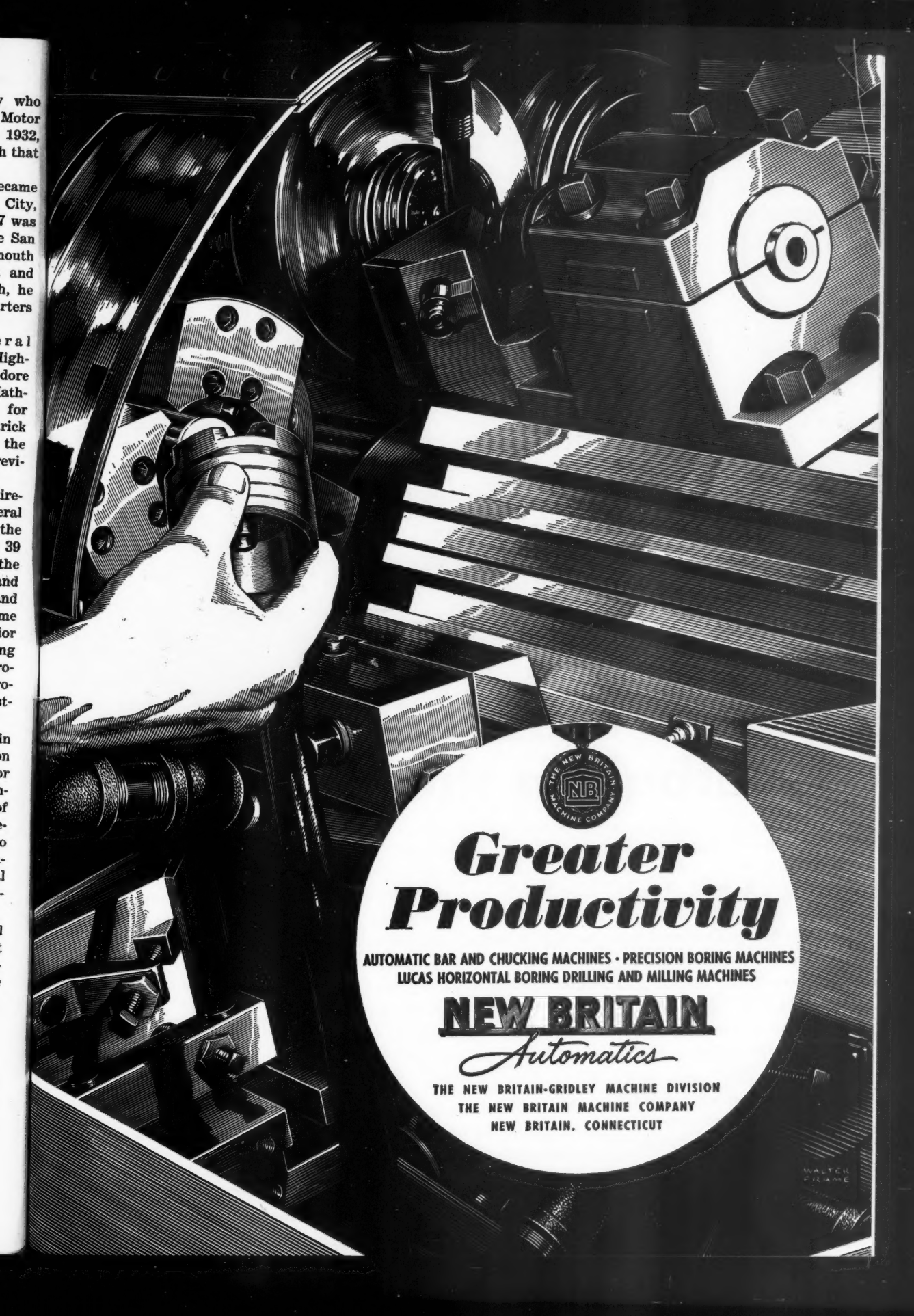
Appointed the new general manager of the corporation's Highland Park, Mich., plant is Theodore R. Patrick, succeeding H. R. Matheny, retired. A Chrysler man for more than 25 years, Mr. Patrick has been operating manager of the plant for about a year and previously was factory manager.

At General Motors, the retirement of Roy C. Miller, general director of purchasing for the Fisher Body Division, after 39 years' service, brought about the appointment of Jesse B. Hildebrand to that post. Mr. Hildebrand joined Fisher Body in 1927, became assistant buyer in 1935 and senior buyer the following year. During the war he was in charge of procurement for Fisher's tank program. Since then he's been assistant general director, purchasing.

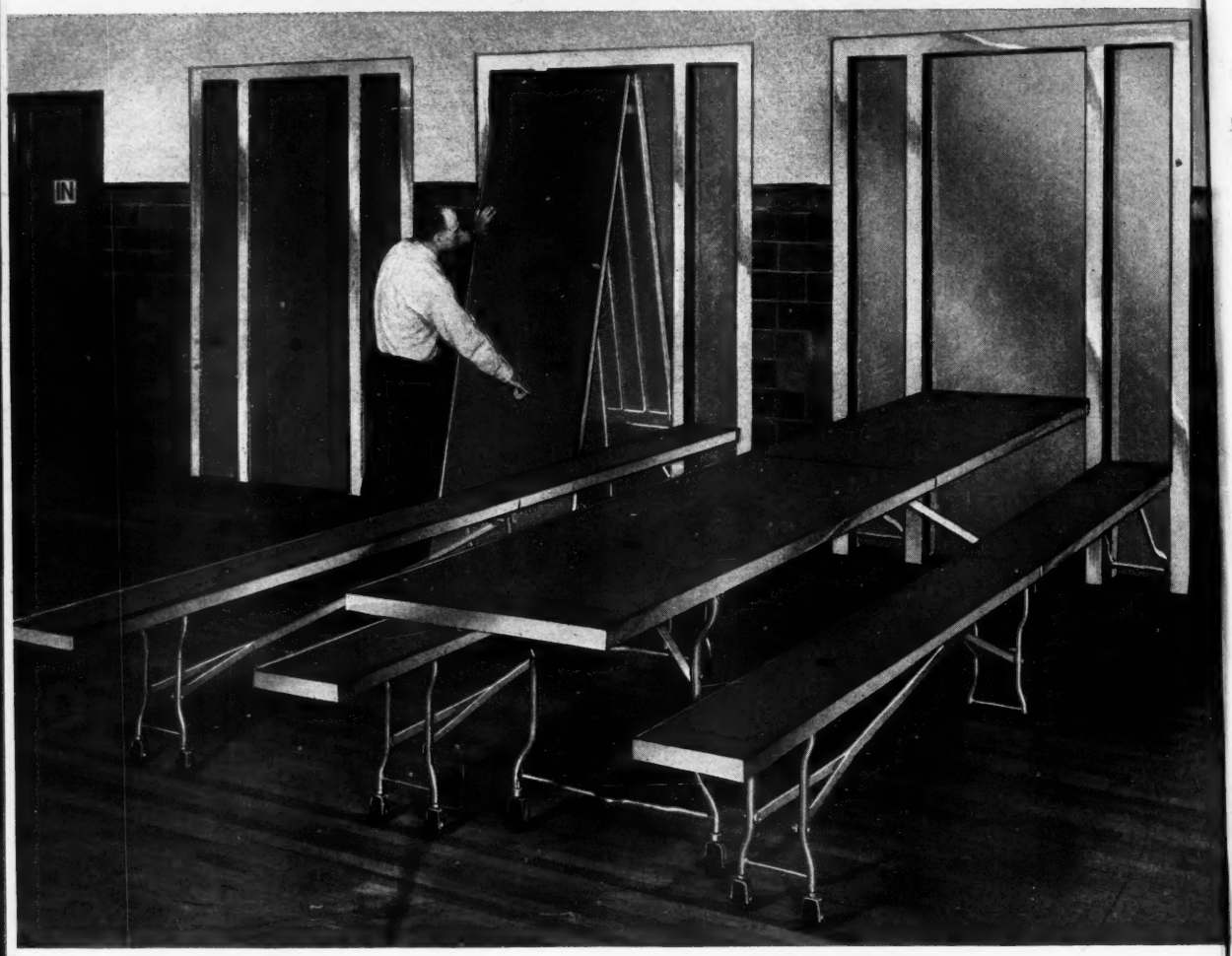
Two general superintendents in charge of automotive production have been named by Buick Motor Division. Donald F. Taylor, general superintendent in charge of all Ordnance production, will retain that position in addition to his new duties: Joseph J. Schweinfurt has been assistant general superintendent on the J-65 jet engine program.

With the change, Mr. Taylor will be in charge of assembly, sheet metal work, forging and manufacture of small parts under the split general superintendency. Mr. Schweinfurt will have charge of machining operations and the foundry.

At Oldsmobile Division, A. E. McRae has been appointed general superintendent of the new J-65 jet engine parts plant in Lansing. His position as superintendent of the 90-mm gun plant will be taken over by Arnold I. Hansen, who has been assistant superintendent.


THE NEW BRITAIN MACHINE COMPANY
NB
Greater Productivity
AUTOMATIC BAR AND CHUCKING MACHINES · PRECISION BORING MACHINES
LUCAS HORIZONTAL BORING DRILLING AND MILLING MACHINES
NEW BRITAIN
Automatics
THE NEW BRITAIN-GRIDLEY MACHINE DIVISION
THE NEW BRITAIN MACHINE COMPANY
NEW BRITAIN, CONNECTICUT
WALTER FILAME

SHARON STEEL



Basketball in the dining room

The multiple use of space is a modern trend in architecture made possible largely because of many new steel products. School gymnasiums double as lunch rooms, large church areas can be made to serve both as recreational centers and upper rooms, Y.M.C.A. and other club and lodge buildings can make better use of the space available because of *In-Wall* steel tables and benches that quickly, silently and easily fold in and out of the wall as the occasion demands.

Because these tables are constructed of strip steels and welded steel tubing they are light, yet rigid, easily maintained and fireproof. The lightness enables quick set-ups. A single man can roll out 10 tables in eight minutes. The rigidity prevents twisting and warping. The tables fit snugly, but will not bind in their casements. The smooth steel surface makes sanitation a simple matter.

Too, the use of strip steel means the fabrication and material cost of these tables can be held to a minimum.

If you use steel — stainless, special alloy, coated or plain carbon—it is good business to have Sharon high on your supplier list, for Sharon is one of the world's largest producers of quality strip steels.

SHARONSTEEL

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Chicago	Cincinnati
Cleveland	Dayton
Detroit	Indianapolis
Milwaukee	New York
Philadelphia	Rochester
Los Angeles	San Francisco
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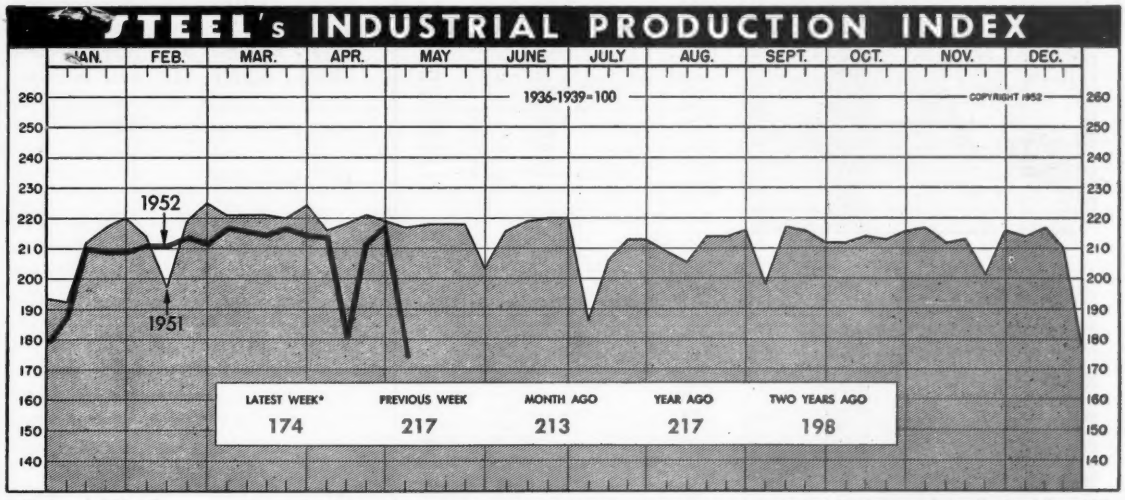
For information on Titanium contact Mallory-Sharon Titanium Corp., Niles, Ohio


STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
1936-1939=100
COPYRIGHT 1952
260 250 240 230 220 210 200 190 180 170 160 150 140
1952
1951
LATEST WEEK* 174
PREVIOUS WEEK 217
MONTH AGO 213
YEAR AGO 217
TWO YEARS AGO 198

* Week ended May 3

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.

With labor uneasy and consumer demand down, industry isn't stocking up on supplies. Production recovers after strike plunges index again

COLD WINDS blowing from the labor front are chilling hopes for better business weather in the late spring and early summer months.

Hesitant — With the walk-in, walk-out steel industry muddle continuing, petroleum workers striking and other labor pressures building up elsewhere, businessmen are waiting to see which way the cat jumps before going ahead with plans to step up production.

Despite the uneasy steel situation, many metalworking executives are hesitant to stock up on supplies. The lag in consumer demand is making "careful buying" the watchword among companies dependent on civilian orders. Makers of appliances are feeling a decided pinch, and many are cutting back production sharply. These include such important manufacturers as General Electric Co., Frigidaire division of General Motors Corp. and Westinghouse Electric Corp.

Steady Rise—In spite of these setbacks, other trends may take the lead and bring more favorable conditions in the next few months. Top factor on the list is defense. As the year rolls toward its end, production and deliveries of military goods are expected to continue increasing. The public may again start to spend the dollars it has been salting away. Although we may not see any sharp upsurge in consumer spending in the next few months, a steady rise in consumer purchasing is quite possible.

If the unrest of the labor scene quiets down, more favorable business during the rest of the year is likely even though there's still no promise of a business bonanza.

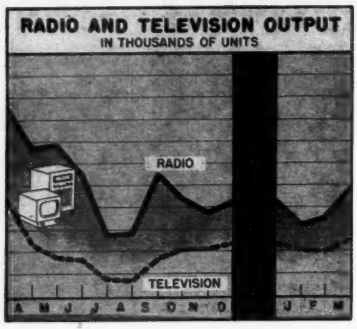
Reflecting the sharp drop in steel capacity brought on by the last steelworkers' walkout, STEEL's industrial production index plunged 43 points to 174 per cent of the 1936-1939 average. Following the cut in ingot capacity by 47.5 per cent, freight car loadings and electric power production showed marked declines. Auto and truck output fell off slightly from the previous week's level.

More Cars Planned . . .

With encouraging sales reports coming in from dealers, automakers are getting as many passenger cars into the field as they can under present materials restrictions. Output this month may remain at the high April levels, when 415,000 autos rolled off assembly lines. April was the highest production month since August, 1951. Of course, the greatest threat to May production is another shutdown in the steel industry. While many auto companies may now have fairly good steel supplies, the shortage of one specification could be disastrous to production. Right now, the auto industry is making a fairly good showing. In the week ended May 3, *Ward's Automotive Reports* says U. S. and Canadian plants turned out 130,108 cars and trucks, a drop of 4122 units from the usual month-end speed-up of the previous week. So far this year, total U. S. and Canadian car-truck output stands at 1.4 million units, compared to 2.1 million units assembled during the same period last year before materials allocation came into effect.

Building Upward . . .

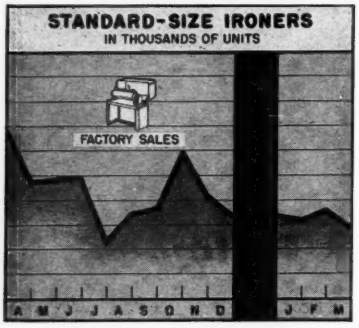
Contractors and architects are knuckling down to work. Outlays for new construction in April reached nearly $2.5 billion, setting a new record for the month, reports the Commerce Department. Outstanding increase was noted



Radio and Television Output
Thousands of Units

	Radio		Television	
	1952	1951	1952	1951
Jan.	632	1,203	405	646
Feb.	739	1,303	409	679
Mar.	976	1,720	511	875
Apr.	...	1,337	...	469
May	...	1,373	...	339
June	...	1,083	...	327
July	...	548	...	152
Aug.	...	563	...	147
Sept.	...	1,100	...	337
Oct.	...	875	...	412
Nov.	...	748	...	415
Dec.	...	851	...	469
Total	...	12,714	...	5,267

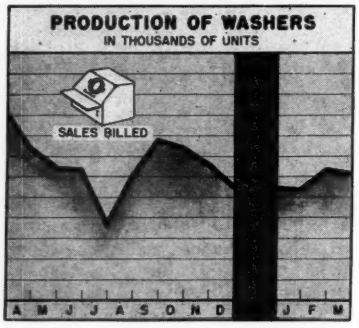
Radio-Television Mfrs. Assn.



Standard-Size Ironers
Factory Sales—Units

	1952	1951	1950
Jan.	15,636	24,600	20,300
Feb.	17,630	32,400	27,600
Mar.	13,913	34,700	37,800
Apr.	.....	23,700	31,600
May	.....	24,200	27,400
June	.....	24,500	27,100
July	.....	11,100	25,100
Aug.	.....	17,200	42,700
Sept.	.....	18,300	41,400
Oct.	.....	29,800	47,500
Nov.	.....	20,500	41,900
Dec.	.....	16,900	38,800
Total	.....	277,900	409,200

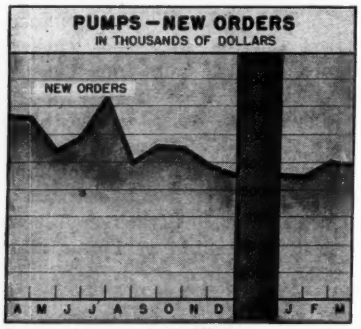
American Home Laundry Mfrs. Assn.



Household Washers
Sales Billed—Units

	1952	1951	1950
Jan.	213,998	321,092	275,576
Feb.	255,864	341,328	342,967
Mar.	248,431	368,455	423,802
Apr.	.....	292,193	333,072
May	.....	253,942	304,640
June	.....	253,119	325,217
July	.....	139,779	282,261
Aug.	.....	239,081	381,452
Sept.	.....	313,756	424,043
Oct.	.....	297,210	439,924
Nov.	.....	262,484	379,964
Dec.	.....	218,664	377,013
Totals	.....	3,301,123	4,289,931

American Home Laundry Mfrs. Assn.



Pumps, New Orders
In Thousands of Dollars

	1952	1951	1950
Jan.	5,517	6,477	2,586
Feb.	6,020	6,480	2,938
Mar.	5,925	7,654	3,313
Apr.	....	7,583	3,376
May	....	6,371	3,668
June	....	6,852	4,153
July	....	8,358	4,080
Aug.	....	5,911	6,429
Sept.	....	6,552	5,191
Oct.	....	6,506	4,985
Nov.	....	5,908	5,961
Dec.	....	5,553	6,720
Total	....	80,175	53,400

Hydraulic Institute.

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Issue Dates of other FACTS and FIGURES Published by STEEL

Construction .....May 5	Gear Sales Apr.7	Ranges, Gas Apr.28
Durable Goods Mar.31	Gray Iron Castings..Apr.14	Refrigerators Apr.28
Employ., Metalwkg. Apr.21	Indus. Production ..Apr.21	Steel Castings Apr.14
Employ., Steel Apr.28	Machine Tools Mar.10	Steel Forgings Apr.7
Fab. Struc. Steel ...Apr.7	Malleable Castings .Apr.14	Steel Shipments Apr.21
Foundry Equip. Apr.14	Prices Feb.18	Vacuum Cleaners ...May 5
Freight Cars Apr.21	Purchasing Power ..Mar.3	Wages, Metalwkg. ..May 5
Furnaces, Indus. ...Mar.31	Ranges, Elec. Apr.28	Water Heaters Mar.24

in private industrial plant expansion which topped outlays during the same month last year by some 35 per cent. Contract awards for heavy construction totaled $288.2 million in the week ended May 1, says *Engineering News-Record.* That's nearly $18 million more than the value of awards in the comparable week of 1951.

Oil Stocks Up . . .

With the petroleum workers out on strike, the Interior Department reports stocks of domestic and foreign crude reached 264.8 million barrels at the close of the week ended Apr. 26. That's 2 million more barrels over the previous week's supply. Domestic crude petroleum that would be consumed or exported under normal conditions in May was estimated at 6.3 million barrels daily.

Piling Higher . . .

Stocks of bituminous coal totaled 77.3 million net tons as of Apr. 1, says American Coal Sales Association. That's nearly 6 million net tons over supplies stockpiled at the same date last year. Industrial stockpiles were up 8.9 per cent over the year-ago supplies, while retail stocks dipped 17 per cent from last year. Bituminous coal production remains under year-ago averages. In the week ended Apr. 26, production totaled approximately 9.7 million net tons, says the association. That's 719,000 tons under the same week, 1951.

No Peak Seen . . .

The U. S. apparently will reach no population ceiling in the relatively near future. U. S. population will increase between 162 and 180 million people in the decade between 1950 and 1960, predicts the Census Bureau. The nation's population will reach over 200 million by the year 2000, according to some estimates.

Credit Falls . . .

Consumer installment credit outstanding declined $35 million in March, bringing the total to $13 billion—moderately above the year-ago level. Installment credit for automobiles dropped $36 million

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	53.0	100.5	100.5
Electric Power Distributed (million kwhr)	6,985	7,134	6,560
Bituminous Coal Output (daily av.—1000 tons)	1,621	1,529	1,741
Petroleum Production (daily av.—1000 bbl)	5,100[1]	6,371	6,174
Construction Volume (ENR—millions)	$288.2	$371.1	$270.6
Automobile, Truck Output (Ward's—units)	130,108	134,130	154,523
TRADE			
Freight Car Loadings (unit—1000 cars)	700[1]	779	803
Business Failures (Dun & Bradstreet, number)	150	168	163
Currency in Circulation (millions)[3]	$28,460	$28,333	$27,255
Dept. Store Sales (changes from year ago)[3]	+4%	−1%	+6%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$17,258	$17,672	$17,076
Federal Gross Debt (billions)	$258.3	$258.0	$254.7
Bond Volume, NYSE (millions)	$14.2	$17.0	$10.7
Stocks Sales, NYSE (thousands of shares)	6,325	6,800	10 147
Loans and Investments (billions)[4]	$73.1	$73.1	$69.9
United States Gov't. Obligations Held (billions)[4]	$31.2	$31.2	$30.8
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	171.92	171.92	171.92
STEEL's Nonferrous Metal Price Index[6]	240.9	243.6	243.0
All Commodities[7]	111.2	111.3	115.0
All Commodities Other Than Farm and Foods[7]	113.0	113.1	116.6

* Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1951, 1,999,035; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

during the month, while installment loan credit rose $76 million, continuing the steady upward trend in this category. Charge accounts slid off $112 million in March. Total consumer credit totaled $19.6 billion, a decline of $159 million during the month, but $178 million more than a year ago.

Layoffs Decline . . .

Layoffs of factory workers declined between February and March for the fourth consecutive month, reports the Bureau of Labor Statistics. The March layoff rate of 10 per 1000 employees was only slightly above March, 1951, the postwar low for the month. For the eleventh consecutive month, hiring of workers in manufacturing plants continued below the post World War II average for the season. Hirings in March were at a rate of 40 per 1000 employees, about the same as February, while 13 per cent lower than hirings in March, 1951.

More New Firms . . .

New businesses totaled 7902 in March, 10.7 per cent above February when 7138 new firms received charters, according to Dun & Bradstreet. The first quarter of 1952 saw 23,397 new companies, 2.8 per cent more than last year and 6.8 per cent over the post World War II low of 21,905 charters recorded in the first three months of 1949.

Trends Fore and Aft . . .

Metalworking companies repaid $4 million on loans in the week ended Apr. 23. Since Dec. 26, 1951, these companies have borrowed $994 million . . . Department store sales in March dropped 4 per cent of the 1947-1949 average, says the Federal Reserve Board . . . State governments spent $100 per person in 1951. Total state expenditure was $15.1 billion . . . Loading of revenue freight for the week ended Apr. 26 totaled 779,402 cars. This was 5.5 per cent below the same 1951 week and 4.6 above the corresponding week in 1950 . . . Total March wholesalers sales, after seasonal adjustment for variations, were 8 per cent below the previous month. Inventories of wholesalers remained virtually unchanged from February . . . General Electric Co. is laying off employees at its radio receiver plant in Utica, N. Y. Over-all production will be reduced about 20 per cent . . . Net working capital of U. S. corporations amounted to $80.9 billion at the end of 1951. That's an increase of $2.5 billion, less than half the increase in the preceding year.

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Your costs — and profits — may hinge largely on the cold rolled strip steel you use.

To make certain you get the *right kind,* every coil of cold rolled strip steel we sell is *now* identified by one of these tags.

An economy material for simple forming operations and general use where uniformity of physical characteristics and close gauge accuracy are not required. An excellent base for paint and enamel.

For intricate fabricating operations where die life is an important factor of cost and all applications which demand precision and uniformity of gauge, chemistry and physical properties. Close gauge tolerances insure maximum "square footage" per ton.

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He wins when the pressure's on

5'11"	HEIGHT	5'11"
29 yrs.	AGE	29 yrs.
165 lbs.	WEIGHT	165 lbs.
39"	CHEST	39"
7"	WRIST	7"
32"	WAIST	32"

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. . . there's more to a "Champion" than the tape measure shows!

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- **LONG LIFE OF DIES**
- **HOLDS TRUE DIMENSIONS**
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- **LONGER PRODUCTION RUNS**
- **LOWER OVERALL DIE COST**

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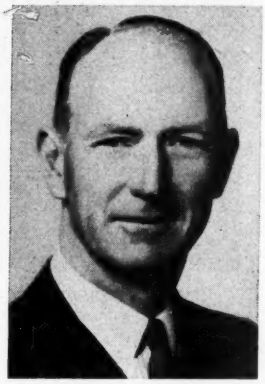
. . . the most dependable name in die blocks, piston rods . . . hammer rams . . . sow blocks.



LOUIS H. LAMOTTE
. . . IBM V. P. of sales

International Business Machines Corp., New York, appointed **Edward M. Douglas** as vice president in charge of special administrative matters, and **Louis H. LaMotte** vice president in charge of sales. Mr. Douglas previously was vice president-sales, with headquarters in New York, and Mr. LaMotte was vice president, with headquarters in the Washington office. Both will be stationed in New York.

W. L. Litle was elected president and chief executive officer of **Bucyrus-Erie Co.**, Milwaukee. He succeeds **N. R. Knox**, president since 1943, who becomes vice chairman. **W. W. Coleman** is chairman of the board. Mr. Litle has been executive vice president since 1950. He also has been elected to the executive committee. Following retirement of **J. G. Miller**, secretary and treasurer, **F. C. Weiblen** was made treasurer and **L. S. Cline**, secretary. **P. H. Birckhead**, vice president of sales, fills the vacancy on the board created by retirement of **D. P. Eells**.

W. S. Hartford retires May 15 as vice president in charge of sales of **Webster-Chicago Corp.**, Chicago.

Paul Renshaw, president, **General Railway Signal Co.**, Rochester, N. Y., became chairman of the board as **Herbert W. Chamberlain**, executive vice president, was moved up to the presidency. **Arthur E. Heimbach**, vice president, was elected to the board of directors.

L. J. CAMPBELL
. . . president, Firestone Steel Products

L. J. Campbell was elected president of **Firestone Steel Products Co.**, Akron, subsidiary, Firestone Tire & Rubber Co. He has been vice president since 1950.

Benjamin F. Fairless, president and chief administrative officer since 1938 of **United States Steel Corp.**, New York, was chosen as chairman and chief executive officer to succeed **Irving S. Olds** who has retired. Mr. Fairless continues as president of the corporation and also as president of U. S. Steel Co., Pittsburgh, the operating subsidiary. **Roger M. Blough**, executive vice president-law and secretary, was appointed vice chairman of the board.

Atlas Steels Ltd., Welland, Ont., appointed **H. George De Young** as vice president of operations. He has been works manager.

H. GEORGE DE YOUNG
. . . V. P.-operations, Atlas Steels

W. A. MANGOLD
. . . U. S. Drill Head gen. sales mgr.

W. A. Mangold was appointed general sales manager, **U. S. Drill Head Co.**, Cincinnati. He has been with the company for more than ten years.

Dr. Paul D. Merica, executive vice president and a director, **International Nickel Co. of Canada Ltd.**, Copper Cliff, Ont., was elected president. **Dr. John F. Thompson**, retiring president, continues as chairman of the board and chief officer. Dr. Thompson was elected chairman in 1951. **R. Leslie Beattie**, vice president and general manager of Canadian operations, transfers headquarters from Copper Cliff to Toronto. He was elected a member of the executive committee of the board and a director of the subsidiary company, International Nickel Inc., New York. **H. C. F. Mockridge** of Toronto was elected to the executive committee.

Austin R. Zender, formerly vice president of sales, was named executive vice president, **Bridgeport Brass Co.**, Bridgeport, Conn. **Stanley Z. Bronner** was promoted from assistant treasurer to assistant vice president and assistant controller; **Warren J. Faust**, from controller to vice president and controller; and **Carl P. Quanz** to vice president and assistant controller. Mr. Quanz served as manager of the Indianapolis plant, a position he retains.

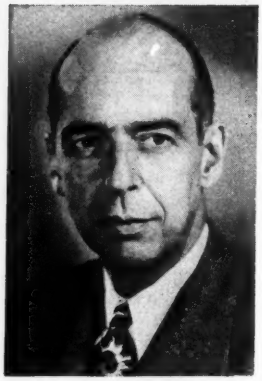
M. F. Cotes, executive vice president, **Motor Wheel Corp.**, Lansing,

Mich., was elected president and general manager to succeed **John F. Garlent,** retired. **C. A. Benson** will succeed **D. L. Porter** as treasurer, and **Thomas J. Fagan** will succeed **B. J. Adams** as assistant secretary in June when Mr. Porter and Mr. Adams retire. **Raymond Sanger** will serve as assistant treasurer. **Karl Egeler** was named vice president, Duotherm sales, and **Don F. Jones,** vice president of Duotherm engineering.

J. Oliver Black has resigned as chairman of the board, **Peninsular Metal Products Corp.,** Detroit, terminating over 30 years of executive service, beginning with his founding of the corporation. **Lucien Lamoureux** replaces **W. G. O'Brien** on the board.

Newly appointed district sales managers for **Black & Decker Mfg. Co.,** Towson, Md., include: **E M. Stuart,** northeastern region; **A. Lee Proctor,** southeastern; **Raymond G. Horner,** central; **W. L. Poynter,** midwest; **Arthur S. Boehm,** Pacific Coast.

Joseph H. Thompson, since 1937 a vice president of **M. A. Hanna Co.,** Cleveland, was elected president and chief administrative officer. **George M. Humphrey,** president for the last 23 years, becomes chairman of the board and chief executive officer. **George H. Love,** president of Pittsburgh Consolidation Coal Co., was elected vice chairman of the Hanna board, and **R. L. Ireland,** for many years a Hanna vice president, becomes chairman of the executive committee. **G. W. Humphrey** was elected a vice president.



J. M. WILKE
. . . V. P. of sales, Laclede Steel

HAROLD R. KILPATRICK
. . . gen. mgr.-sales, Laclede Steel

Laclede Steel Co., St. Louis, elected **J. M. Wilke** vice president and a director. He fills the vacancy on the board created by the death of **W. W. Scott Jr.** in April. He also succeeds Mr. Scott as vice president-sales. Mr. Wilke is succeeded as general manager of sales by **Harold R. Kilpatrick.**

At **Ferro Corp.,** Cleveland, **G. E. Weber** was elected treasurer and comptroller; **Burt A. Stone,** assistant treasurer; **Mrs. M. H. Foster,** assistant secretary; and **J. C. Wessel,** assistant comptroller.

James Simpson was elected vice president, and **M. A. Kavanaugh** was promoted to controller by **Douglas Aircraft Co. Inc.,** Santa Monica, Calif.

H. H. Hippler was named assistant director, sales and advertising, **Gar Wood Industries Inc.,** Wayne, Mich. **Ross Miller,** former manager of the Chicago factory branch, was named vice president and general manager of the subsidiary, National Lift Co., Waukesha, Wis. **R. F. Whitworth,** formerly sales manager, national accounts, was named to succeed Mr. Hippler as manager of Gar Wood's branch division. **R. S. Jay** was made sales manager, Findlay division.

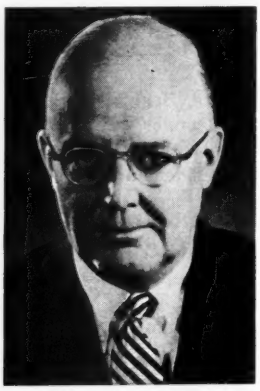
James T. Duffy Jr. has resigned the presidency of **Riverside Metal Co.,** Riverside, N. J. He has headed the company the last three years, and previously was president of Read Machinery Co. Inc.

Paul C. Sandmeyer resigned as vice president and general manager, Stainless Steel Sales Corp., to form his own company as a dealer in buying and selling stainless steel. His address is 1913 W. Olney Ave., Philadelphia 4.

Cold Metal Products Co., Youngstown, elected **J. T. Bachman** vice president in charge of sales. **W. F. Zarbaugh,** purchasing agent and traffic manager, was elected to the office of assistant general manager, and is succeeded in his former duties by **B. P. Evans,** formerly assistant in the purchasing and traffic department. **Charles H. Longfield Jr.** has been added to the Cleveland district sales office.

Edgar E. Ritcey was elected president, **Dominion Wheel & Foundries Ltd.,** Toronto, Ont. **Charles H. Ley** was elected vice president; **David H. Gilbert,** vice president; and **Benton Dixon,** sales manager.

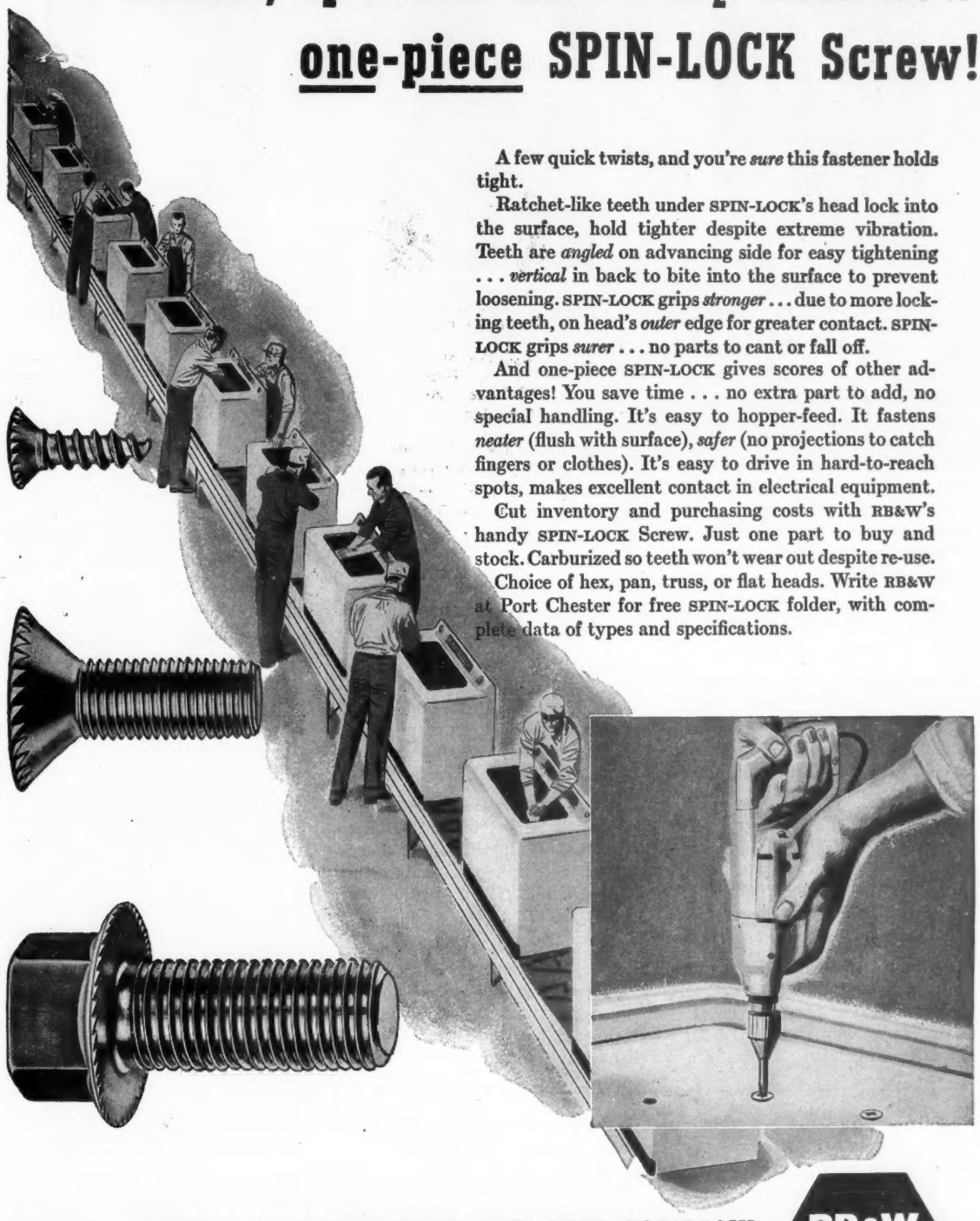
T. H. Parke, assistant vice president in charge of the New York office of **Scullin Steel Co.,** was promoted to the position of vice president. **W. H. Coburn,** former assist-



JOSEPH H. THOMPSON
. . . president, M. A. Hanna Co.

GEORGE M. HUMPHREY
. . . becomes chairman of Hanna's board

Easier, speedier assembly with new <u>one-piece</u> SPIN-LOCK Screw!



A few quick twists, and you're *sure* this fastener holds tight.

Ratchet-like teeth under SPIN-LOCK's head lock into the surface, hold tighter despite extreme vibration. Teeth are *angled* on advancing side for easy tightening . . . *vertical* in back to bite into the surface to prevent loosening. SPIN-LOCK grips *stronger* . . . due to more locking teeth, on head's *outer* edge for greater contact. SPIN-LOCK grips *surer* . . . no parts to cant or fall off.

And one-piece SPIN-LOCK gives scores of other advantages! You save time . . . no extra part to add, no special handling. It's easy to hopper-feed. It fastens *neater* (flush with surface), *safer* (no projections to catch fingers or clothes). It's easy to drive in hard-to-reach spots, makes excellent contact in electrical equipment.

Cut inventory and purchasing costs with RB&W's handy SPIN-LOCK Screw. Just one part to buy and stock. Carburized so teeth won't wear out despite re-use.

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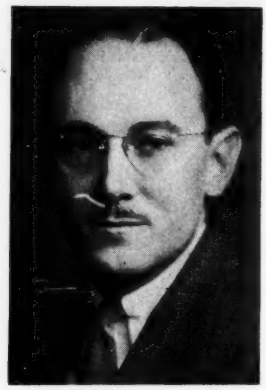
THE COMPLETE QUALITY LINE

106 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

JAMES M. WALLACE
. . . will manage Westinghouse meter div.

GORDON J. BERRY
. . . new president, Electric Products



A. R. ROYLE
. . . gen. mgr. of Gai-Tronics

ant comptroller, was appointed comptroller.

James M. Wallace, formerly manager, switchgear distribution apparatus department, **Westinghouse Electric Corp.,** East Pittsburgh, Pa., was transferred to Newark, N. J., and named manager of the meter division. He succeeds **G. H. Grossnickle,** appointed manager of manufacturing.

Ted Rose was named advertising and promotion manager, **Fullerton Steel & Wire Co.,** Chicago.

Rheem Mfg. Co. has formed an equipment container division, manufacturing and engineering unit, and appointed **Frederick J. Blume** as national manager with offices in Baltimore. **Andrew W. Hughes** was named assistant manager, and **Ray W. Thrasher,** chief project engineer.

James T. Towne was appointed assistant to the vice president, **Vanadium Corp. of America,** New York.

Marvin S. Bandon, former vice president, Clary Multiplier Corp., was elected vice president of marketing and research for **Plomb Tool Co.,** Los Angeles.

Electric Products Co., Cleveland, elected **Gordon J. Berry** as president. He has been vice president in charge of sales.

Air Reduction Co. Inc., New York, elected **George V. Slottman** a vice president. He has been director of research and engineering since 1949, and continues in charge of that activity.

Lawrence J. Wimmer was appointed eastern service manager, **E. W. Bliss Co.,** located in New York.

Hershel E. Kaufman was appointed assistant to general superintendent, and **Austin E. McDonough** as assistant division superintendent of blast furnaces at **United States Steel Co.'s** South Chicago Works.

Harold J. Miller was appointed assistant to the president, **Buffalo Arms Inc.,** Buffalo. He is in charge of production and administration at the Akron, N. Y., plant.

William G. Gisel becomes comptroller of **Bell Aircraft Corp.,** Buffalo, to succeed **David F. Devine,** now vice president, financial division, Arma Corp. **John W. Rane Jr.** was appointed assistant secretary. He is assistant director of contracts.

A. R. Royle was appointed general manager and elected to the board of directors of **Gai-Tronics Corp.,** Reading, Pa. He joined the company in 1949 as sales manager.

General Dry Batteries Inc., Cleveland, promoted **Fielder Israel** from assistant to the president to executive vice president, and **Carl Brooks** from sales manager to vice president of sales.

R. W. Ramage becomes district sales manager, Hartford, Conn., for **Bliss & Laughlin Inc. J. Earl Roemer** becomes district sales manager at Buffalo. Both appointments become effective June 1.

Koestlin Tool & Die Corp., Detroit, announces changes in its executive organization due to the recent death of **Foster L. Fralick,** vice president and general manager. **Orville H. Foster Jr.,** former secretary-treasurer, becomes executive vice president; **William Sullwold,** general superintendent, was named vice president and general manager; **Andrew J. Ruh** was elected a vice president and named general superintendent; **G. Schlussel,** comptroller, was elected secretary and treasurer.

OBITUARIES . . .

John L. Lang, 68, vice president of **Algoma Ore Properties,** a subsidiary of Algoma Steel Corp. of Canada, died Apr. 29 in Toronto, Ont.

George E. Rose, 74, who retired in 1946 as vice president of **International Harvester Co.,** Chicago, and general manager of its Wisconsin Steel Division, died Apr. 29.

Clarence C. Rausch, 57, assistant vice president and manager, rust preventive sales, **Dearborn Chemical Co.,** Chicago, died Apr. 29 in Houston.

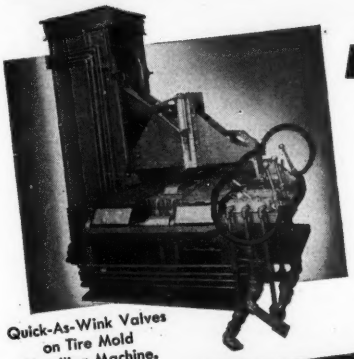
John S. Shaw, 57, former director of safety, **Hercules Powder Co.,** Wilmington, Del., died Apr. 26 in Houston. He retired in 1950.

Benjamin O'Shea, 75, former president, **Union Carbide & Carbon Corp.,** died May 2 at his home in Lestor Manor, Va.

John C. Trefts, 73, for 48 years president of **Farrar & Trefts Inc.,** Buffalo, died Apr. 27. He had retired recently.

Quick-As-Wink Solenoid Air Valves on Battery of Heavy Duty Presses.

Quick-As-Wink Control Valves



Quick-As-Wink Valves on Tire Mold Handling Machine.

Quick-As-Wink Valve on 8-spindle Automatic Chucking Machine.

proven dependable performance that keeps you out of "post-mortems"

● The easiest and surest way of preventing break-downs, repair costs, material spoilage, machine damage, operator injury, lost production, customer ill-will — and their "post-mortems", is to install Quick-As-Wink Valves on *all* your air and hydraulic controls.

Positive and fast acting, every valve is designed and built to meet the most exacting requirements and individually tested before being shipped. All operating parts are in pressure balance eliminating any tendency to creep or crawl. Danger of "repeating"— major cause of accidents, break-downs and other trouble — is practically eliminated. Most foremen and superintendents know there's nothing better, for long, dependable, trouble-free service than Quick-As-Wink Control Valves. Can you afford to gamble with less?

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AIR AND HYDRAULIC
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Hand, Foot, Cam, Diaphragm and Solenoid Operated

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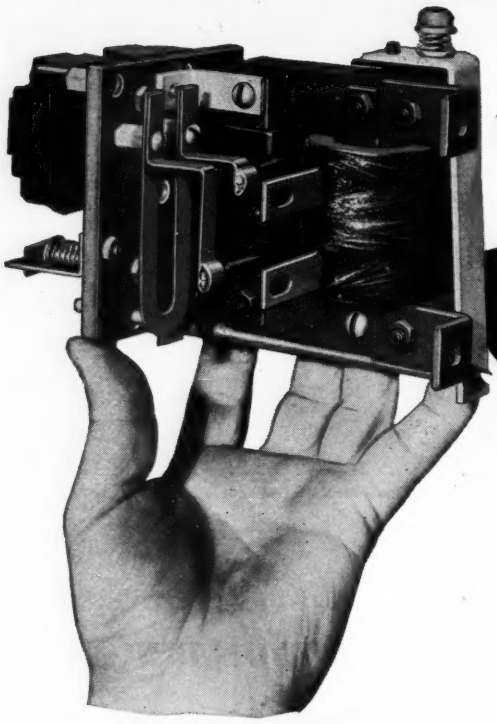
NEW E C & M *Thermal-Magnetic* OVERLOAD RELAYS

COMPLETELY PROTECT A-C *MOTORS* UNDER *all* CONDITIONS



Above—relays are front-connected and may be removed as a unit from the mounting base. U-shaped bimetal acts directly on tripping lever.

DIRECT-ACTING—NO DASHPOTS

Instantaneous Trip (magnetically)

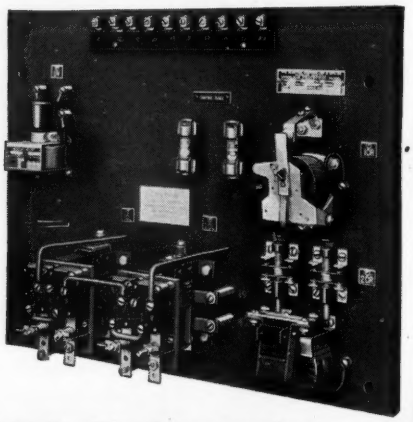
Timed Responsive Trip (thermally) on Single Phase, Failure to Start, during Running, etc.— *all* in this *one* relay

ADVANTAGES

1. Inverse time-delay operation on overloads.
2. Instantaneous operation on short circuits.
3. Short thermal reset time.
4. Saturable core aids thermal inverse time element operating characteristics.
5. Transformer couples motor current to thermal action, resulting in accurate transmission of motor operating current for quick, positive response.
6. V-split laminated core, mechanically and magnetically locked, permits changing primary coils easily.
7. Primary coils have wider current ranges than comparable heater-type relays, resulting in fewer coils for wide range of motor sizes.

No. 20 H-50 Type ZHS Starter in Type VIII Enclosure.

These Thermal-Magnetic Relays eliminate useless tripping on harmless temporary overloads. They provide positive, *timed* response to the thermal energy of load currents, and protect the motor from overheating.



Type ZTM Overload Relay Panel with Time-Delay Under-Voltage Protection Feature.

Write for NEW Bulletin 1180-39 describing these new relays.

THE ELECTRIC CONTROLLER & MFG. CO.

2698 EAST 79TH STREET • CLEVELAND 4, OHIO

Production AND Engineering
NEWS AT A GLANCE

CHECKS BURDEN TROUBLES—By making continuous measurements of temperature and gas composition over a whole blast furnace, a German steel company is able to follow gas distribution and to recognize troubles fast. They use a recording gas probe installed below the blast furnace throat to get the data. Optimum methods of operation and furnace profile for various burden conditions can be quickly determined without laborious investigations. Blast furnaces designed to handle one type of ore work more efficiently than those which must deal with large variations in burdens. The gas probe appears to offer a good way to discover the best operating methods even for changing burdens.

BUILT-IN QUALITY—You can't inspect quality into a part. But you can give the man at the machine gaging equipment that will guarantee a minimum of rejects at final inspection. Automatic dimensioning and segregating machines or multiple point checking units can spell the difference between profitable and unprofitable operations. In the selection of the proper gaging for a given job it is well to understand what the equipment will and won't do. p. 88

DIRECT ATOMIC POWER—Peace-time use of atomic energy in the steel production and welding industries is the subject of a patent application by Flodar Corp. Basic idea is the direct use of atomic energy for power and heating purposes, rather than the usual indirect application. Greater speed and efficiency in production time and other economies are expected to result from the system . . . The Atomic Energy Commission is establishing a new department to exploit and encourage private industry's development of feasible means of operating atomic power reactors.

FOR COOLER HEADS—Prefabricated metal ceiling panels now afford radiant heating and cooling as well as acoustical control. Perforated metal panels, heated by hot water, radiate heat into the rooms. Blankets of acoustical material above heating units provide sound control and act as thermal insulator and vapor barrier. Rooms are cooled in the summer when cold water is circulated through the system.

CERAMIC PAPER INSULATION—Ceramic paper made by conventional paper-making methods from aluminum silicate or similar clay, will withstand temperatures of 2500°F when combined with bentonite clay. It can be machined or drilled. Principal use will be in electrical insulation.

STEAM SLINGSHOT—A new type steam catapult for aircraft carriers will sling a jet fighter into the air even when the ship is headed downwind. The catapult uses a slotted cylinder through which a piston is driven by high pressure steam from the ship's boilers. A hook on the aircraft is connected to the piston. A sealing device keeps steam from escaping through the cylinder slot.

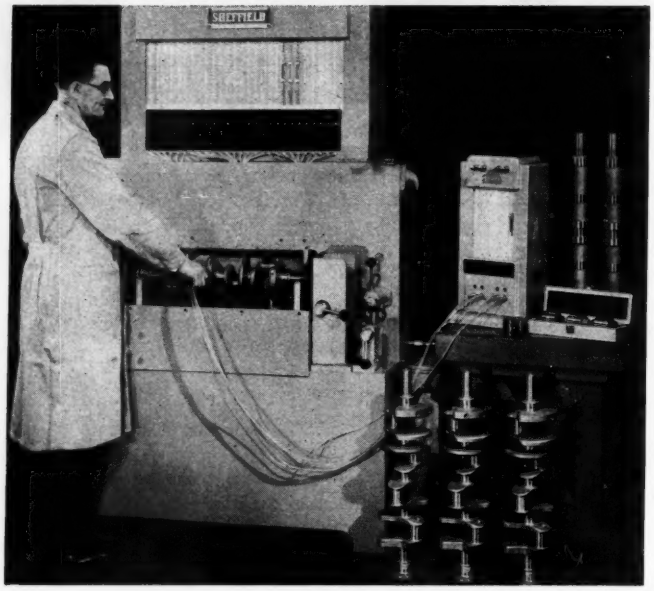
SILVER-CLAD STAINLESS—American Cladmetals Co. is permanently bonding silver to stainless steel. The company points out that the silver surface has electrical conductivity superior even to copper. Stainless backing has corrosion resistance and structural properties so silver can be used despite its softness. The silver clad steel is being produced to fill an order in the communications field.

MACHINABILITY IMPROVED—Most of the problems encountered in machining boron steels can be overcome by conventional heat treatments. Machining problems arise most frequently from substitution of lower carbon contents in the carburizing grades. Medium carbon boron steels quenched and drawn, are no different to machine than the materials they replace. Proper heat treatment of any steel will result in structures that improve machinability. That's also true of boron steels. p. 94

MUFFLED CHUG—Noise of a diesel engine can be reduced by modifying the cylinder head covers. Experiments at the Navy's engineering experiment station show that noise level of a test engine can be cut by as much as 8 decibels, with a lighter cover featuring an aluminum container packed with 3 inches of glass fiber. Also tried, but unsuccessfully, were sheet steel, sheet lead and bronze wool.

TWIN-MOTOR DRIVES—Westinghouse reports that Pittsburgh Steel Co.'s new 66-inch tandem cold-reduction mill will be the first installation with twin-motor drives on all stands. The four-high, four-stand mill will operate at maximum delivery speed of 3100 feet per minute. It will produce steel strip from 24 to 62 inches wide and 0.015 to 0.050-inch thick. Maximum coil weight: 60,000 pounds. Control equipment for the mill includes the new Magamp magnetic-amplifier voltage-regulating equipment. This will furnish the excitation and regulate voltage of generators supplying the mill and reel motors. Twin-motor drives have been used previously on the last two stands of several four and five-stand mills and on the last three stands of some five-stand mills, but not on all stands.

Metalworking Outlook—p. 51 *Market Outlook—p. 171*



Simultaneous readings on 34 crankshaft dimensions permit 100 per cent inspection at a low cost per piece inspected

One of the operations in semifinish inspection of shells at Chevrolet's Shell Division. Lights go out if shell passes

PRODUCTION GAGING: Maximum Accuracy at

Either automatic dimensioning and segregating machines or multiple point checking units may help bring sky-rocketing inspection costs down to earth

By ED KARPICK
Associate Editor

MAKING a profit on numerous manufacturing operations may depend on the gaging method used. Thus keeping obsolete inspection equipment on the job is as poor a manufacturing practice as producing the parts with ancient machinery. Many manufacturers regard inspection as a necessary evil. Shotgun marriage or not, manufacture and inspection are irrevocably joined together.

Being a nonproductive operation, guaranteeing only accuracy to a product, it is doubly important for inspection to be a model of efficiency. Accuracy cannot be sacrificed for speed, and tolerances that must be met on more and more parts are in the tenths of thousandths range. Products requiring 100 per cent inspection are naturals for automatic gaging if volume is high.

Although the inspection rate attained by mechanically fed parts is spectacular, an equally important role in production gaging is performed by devices operated at lower speeds. Irregularly shaped pieces, parts produced in smaller lots or extremely bulky units are not well suited to automatic inspection. Since they often introduce special measuring problems, equipment is usually custom-tailored for gaging these units, offering important time savings and increased accuracy.

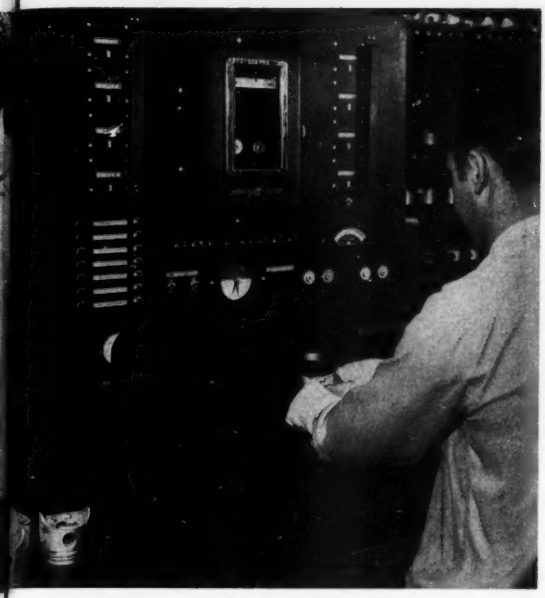
An Affirmative Answer? — Whether or not a manufacturer should invest in special equipment for production gaging requires an affirmative answer to at least one of the following questions:

Will it reduce inspection labor costs? Will it result in a better end product? Will it remove an inspection bottleneck?

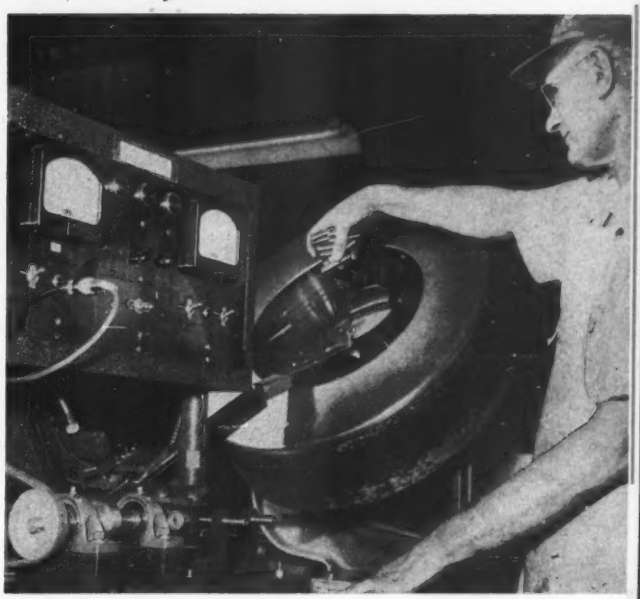
Direct labor savings normally should pay for the equipment in seven months to a year. Longer amortization periods are generally justified by management on the basis of improved quality of the part.

Automatic equipment using a mechanical feed, rapid inspection and sorting into numerous classifications is a slick solution on jobs where volume is high, tolerances are reasonably close, amortization period is short and part size and shape is adaptable to hopper or similar feed. Usually this equipment is constantly on the line but some applications currently installed are paying their way on a one day per week basis. Less frequent operation is not likely to be desirable or economically feasible.

Cost of automatic gages ranges from about $1000 for a simple type to about $50,000 for a single, more complicated, fully automatic machine. Despite a relatively large initial investment, such equipment is economically justifiable for many producers. The most elaborate installations naturally are found in automotive, appliance and similar plants with thousands of employees. Many small plants subcontracting for the big com-



Critical piston dimension checked simultaneously on Pratt & Whitney gage at DeSoto's new engine manufacturing plant



Automatic valve stem guide inspection unit at Chevrolet's Flint division checks diameters, rejecting off limit pieces

Minimum Cost

panies or turning large volumes of small items are effecting economies with equipment custom-tailored for their needs.

Breakdown—An automatic gage generally consists of: Hopper, a metering or feeding device, a measuring device and provision for disposal of the finished product. Gaging hoppers generally are similar to those used with other machines and often are sold separate from the gaging equipment, being supplied by a company specializing in hopper manufacture.

Propelling or metering devices put single pieces in gaging position at any instant. They take the form of a motor-driven reciprocating slide, rotating table, etc. Disposal on a gage is basically a series of doors opening or closing at the right time and dropping the already measured parts into the correct disposal box. Doors and chutes can be operated by solenoids actuated by the gaging unit.

Devices suitable for continuous or automatic measuring break down into four leading classifications: Air type, electrical contact type, electronic and electromagnetic type and penetration type. Electrical contact devices operate switches based on movement of the contact spindle, the others are gages. Repeat characteristics of the electrical contact unit are on the order of 25 millionths-inch or better. While this means the unit can be used for fairly close tolerances, using the customary 10 per cent gagemaker's tolerance, generally it should be used for nothing less than plus or minus 0.00025-inch. There are cases where this equipment is used for 0.0001-inch but it must be understood that gagemaker's tolerance is being exceeded.

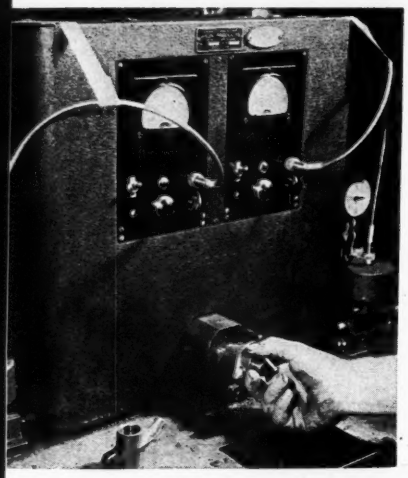
Top Speed—Since the unit is a mechanical device, it is possible, if the spindle moves too rapidly when pieces are passed under it, to have a little bounce at the electrical limits causing some inaccuracy at one of the electrical limits. Checking 70 to 80 pieces per minute is the top speed at which the unit normally operates.

Electromagnetic mechanical and electronic mechanical gages have a similar superficial appearance. In the electromagnetic unit as a piece is moved in under the spindle, the spindle pushes an iron core between a couple of coils. The coils usually run on 60 cycle current, are extremely sensitive and have high magnification. These gages are commonly found with scales graduated in a few millionths of an inch.

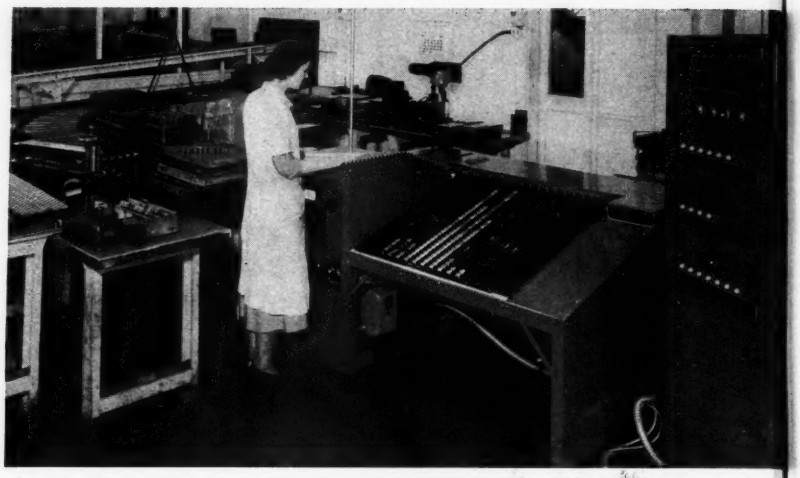
Certain time lags are inevitable despite the electrical actuation. Suppose a small cylindrical piece is to pass beneath either a cylindrically radiused contact or one with a very small flat. The maximum dimension or the time for which the spindle will be in its uppermost position is a mere flicker. Operating the gage on 60 cycles requires about 2 cycles or roughly 1/30-second for the electrical circuit to reach equilibrium.

Time Limit—Time required to get the piece from the hopper chute in front of the metering device, push it to the gage, through the gage and then down through the disposal chute makes the entire operation relatively slow. It limits the possible gage design to a maximum speed of about 60 to 70 pieces per minute, not a snail's pace but a limit nonetheless.

In the electronic mechanical gage, one coil is attached to the spindle and two fixed coils are inside the gage head. Movement of the spindle changes the relative position of the spindle coil to the other two coils. An important difference between this unit and the 60-cycle gage is that the coils operate at 100,000 cycles or



Oil holes in rocker arms are rapidly checked on Arlin unit. Rejection if hole doesn't go through is automatic



Electronic classifier sorts refrigerator compressor pistons and wristpins into 16 gradins equal to 0.0001-inch. Built by Federal Products the unit makes possible a more liberal work tolerance for machining operations

more per second, ranging up to 30 megacycles. Based on the preceding example, if three cycles are allowed for the circuit to reach equilibrium, 1/30,000 second is used for measurement in a 100,000 cycle circuit. This theoretical speed is never achieved in practice but the rate possible is roughly 1000 times as fast as with 60 cycle current.

Ceiling—Material handling speed limitations limit the possible inspection speeds achieved. Equipment to measure roller bearings has been built carrying manufacturer's guarantee of 400 pieces per minute. Tests at the builder's plant showed the machine capable of more than 500 measurements per minute. Currently the latter figure appears to be a practical ceiling and most pieces are inspected at considerably slower rates.

Air gages are essentially devices in which a metered amount of air is passed through an orifice. Metering is generally accomplished by a restrictor in the upstream side of the air line from the orifice. A plug, ring or similar device suited to the shape of the workpiece mounts the orifice. When measuring a piece, flow of air through the orifice is restricted causing a change in the flow, back pressure and velocity in the upstream side. An indicating device is placed in the upstream side.

Signal Lights, Trap Doors—Some indicating devices use a manometer tube to measure the back pressure, others use a bourdon tube or bellows-actuated dial indicator and still others some form of flow or velocity indicator. Most air gages can operate electrical pressure switches actuating signal lights, disposal trap doors or auxiliary mechanisms. For continuous and automatic gaging it has both advantages and disadvantages. High accuracy and a low measuring pressure make it ideal for checking parts that have high finish or are extremely fragile such as finished aluminum foil. Actual measuring pressure is low enough so there is little chance of marking the part. Disadvantage for continuous measurement is fairly limited space between the two measuring jets or between the measuring jet and the solid reference. Speed possible in automatic gaging is below the maximum possible by other means.

Penetration type gages are those where contact cannot be made with the material in its early stages of manufacture as in hot strip mills. These gages may use x-rays, beta particles, gamma rays or similar radiation. Emission source is placed on one side of material measured and the receiving device on the other side. Usual installation is set up as though two gages were operating simultaneously. One measuring thickness of a known sample serves as a master. The other on the production line is compared electrically with the master reading and the difference is shown electrically on an indicating meter.

Selection of the gage for the job depends on the job to be done. There isn't any one gage that will work best in all applications. Size of the original investment, inspection rate desired, total number of parts to be gaged and user's preference are all factors in selection. Several gage manufacturers build two or more gage types adaptable to a particular job, enabling the customer to make his selection from a wider range.

Clean Lines—There is a trend among manufacturers of the more complex gaging equipment to get away from the random arrangement of components to producing a finished piece of automatic inspection equipment. A vice president of research and development for an eastern gage builder says, "Instead of making this equipment like a radio engineer's dream, we are trying to make a gage look like a machine tool." Appearance is only a small part of the story. Better arrangement reduces floor space requirements, makes the machine simpler to use and maintain, and gives it ruggedness enough to absorb a normal amount of operating strain.

Larger or more complex parts like compressor cylinders, pistons,

connecting rods, fuel pump parts, wrist pins, assembled ball and roller bearings, crankshafts, camshafts, ordnance parts and jet engine blades can't pop in and out of automatic arrangements. Either their size or the large number of points that must be dimensioned at one time require a different arrangement. As many as 40 points may need to be read at one time and relationships between points recorded.

Getting these readings without juggling numerous gages offers obvious economies. Not only can one inspector often do the job quicker than ten were able to do under older systems but he can do the job with little training. Guesswork is out. If he can see, he can gage—and to greater accuracy than the oldtimer with his craftsman's feel.

Everything But Tilt—On some jobs the inspector needn't be concerned with specific dimensions. All he needs to do is watch a light panel to see if any dimensions exceed tolerances. The face lights up like a pin-ball machine with the usual color coding being: Amber, within tolerance; red, undersize; and green, oversize. These setups can be coupled with direct reading gages if needed.

Succeeding paragraphs give a brief listing of production gaging equipment made by some of the leading manufacturers in the field. The listing necessarily represents only a fraction of the equipment produced by any manufacturer. Particularly in the specialized lines for either multiple-dimension or automatic gaging applications, machines are built for specific jobs. Examples listed can readily be expanded for gaging similar components.

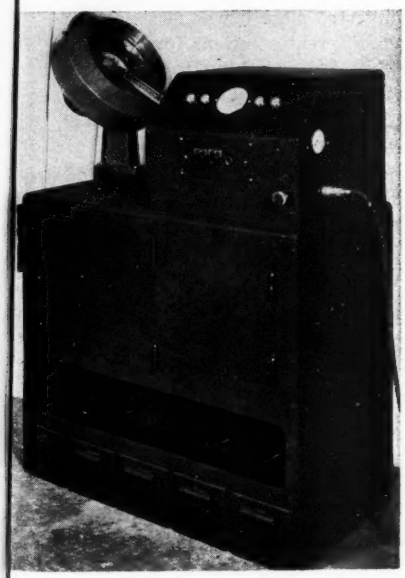
Pratt & Whitney Air-O-Limit and Electrolimit comparators are used on a host of jobs where the operator brings the part to gaging position. Bearing inside and outside diameters at final assembly; pump shafts; wrist pin taper, roundness and diameters; refrigerator compressor parts; and electric motor bearing holes are inspected either on a 100 per cent basis or as part of a quality control program. Standard units can be furnished or special combinations made up for breezing through a multidimensional check.

Keeps Moving—An example of the latter is a unit that final inspects automotive pistons and incorporates an automatic feed slide for pacing the operator. Besides checking numerous critical piston elements, the skirt diameter selective assembly grading symbol is automatically stamped on top of the piston. Readings can be taken to tenths of thousandths or less. Applications using signal lights with or without gages are part of the company's line. For automatic size classification of small parts the Selectronic unit utilizing the Electrolimit circuit as a gaging medium is available in two sizes depending on the part to be handled.

Measuring speaker magnet blanks for diameter and thickness; measuring and classifying tapered roller bearings into 10 increments of 0.0001-inch at 6000 per hour; checking hardness, out-of-roundness, diameter and taper of piston pins at 3000 per hour are some jobs done by Federal Products' automatic gaging equipment. Dial indicators, electromechanical, electronic and air gages are offered.

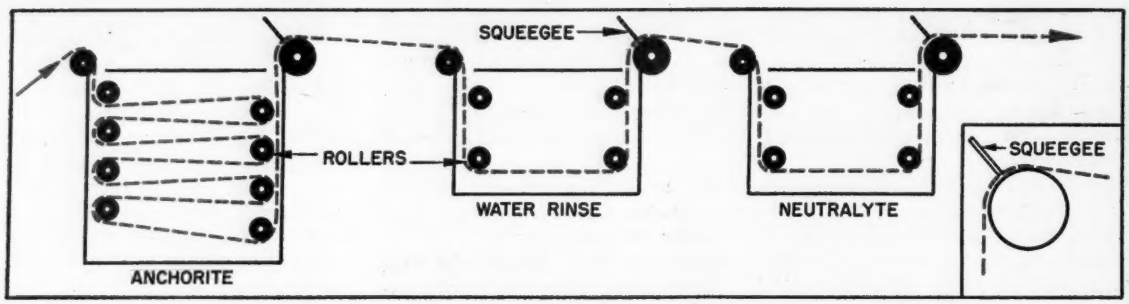
In the Electricator line, dial indicators combined with electric switch circuits can be used in jobs requiring the checking of countless dimensioning combinations. Lights or sound signals can ease the job for inspectors. Similar circuit arrangements are used to control cylindrical grinding machines,

(*Please turn to Page* 103)



Bore in pinion gears is gaged and sorted in five sizes by this Merz air operated unit at the rate of 2600 per hour

Brown & Sharpe electronic gage for inspecting shank of the inserted tooth cutter blade used in the spiral bevel gear generator. Part is loaded by hand since production rate required doesn't necessitate automatic handling



Schematic diagram of arrangement for continuous Anchorizing process on steel ribbon

ACCELERATED PHOSPHATE COATING

Fits High Speed Finishing Setups

Rapid chemical process coats zinc and cadmium parts in 30 seconds to 1 minute. Ferrous surfaces are treated in 2 to 5 minutes. Application is simple

By NORMAN KUPERSCHMID
Technical Director
Octagon Process Inc.
Staten Island, N. Y.

AN ACCELERATED phosphate prepainting treatment is being used effectively on ferrous metals and on such poor organic film acceptors as zinc, galvanized iron and cadmium. The process, utilizing a compound called Anchorite 100, changes the surfaces of these metals into a combination of metallic phosphates, forming an integral part of their "outer layer." This microcrystalline surface is highly corrosion resistant and holds paint tenaciously to metal.

Phosphating is not new, yet many products are being phosphated for the first time, usually in answer to modern problems, often of a military nature. Military specifications in regard to paint failure are particularly rigorous. Two principal specifications for phosphate prepainting coatings are U. S. Army Ordnance 57-O-2C (type II, class C) and JAN-C-490, grade I.

Problems Solved — A manufacturer of metal cabinets received a large government order for ammunition boxes, which were to be phosphated in accordance with Army Ordnance specifications. Government requested rush delivery of a definite number of cases. Manufacturer had only a vapor degreaser. To send parts out for treatment would have been too expensive and time-consuming. A stopgap measure was needed until the necessary tanks could be constructed.

Luckily, the boxes were small. Parts were treated in three steel drums with the tops cut off. Drums were placed alongside the degreaser; gas burners attached to the existing gas line were installed under each drum. First drum contained Anchorite 100 solution, the second hot water, and the third Neutralyte passivating solution.

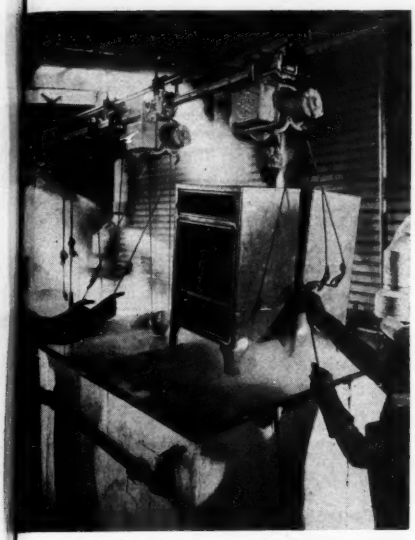
After vapor degreasing, boxes were subjected to a 3-minute phosphate treatment, a 30-second rinse and a 60-second passivating action. With a 190°F temperature, parts were almost dry on emerging from the last drum; however, to speed up production they were carried by hand truck to a hot oven for 2 minutes of drying and then rushed to a spray booth for painting. This makeshift setup enabled the manufacturer to meet his schedules.

When this emergency was over, the manufacturer decided to use the accelerated phosphate prepainting treatment for his regular steel cabinet line. To get optimum results from the treatment, he set up the recommended five-tank immersion line.

Versatile Method — A lacquer and paint finishing plant had to treat such diverse parts as zinc-plated camera parts, shells, instrument cases and radar screens. They degreased all of these parts in a vapor degreaser and were using several different types of solutions to obtain a corrosion-resisting paint base. Operating in a congested plant it was necessary to use different solutions for zinc and steel. By switching to the phosphate compound, an excellent coating was produced on both of these metals in the same bath.

A prominent pen manufacturing organization was faced with the loss of a half a million ball point pen caps. The manufacturer had been making the caps from brass, burnishing them to a high luster and then lacquering for tarnish resistance. Critical defense needs forced curtailment of the use of brass for this nonmilitary use and the manufacturer was forced to turn to plated metals, including a final chrome plate.

Poor throwing power of the solution resulted in peeling of the plate on the narrow inside end of the cap. When the cap was taken off a light film of rust was left on the barrel of the pen which came off on the writers' fingers. The



Steel cabinets being treated in accelerated phosphate prepainting setup. Five-tank immersion line is used

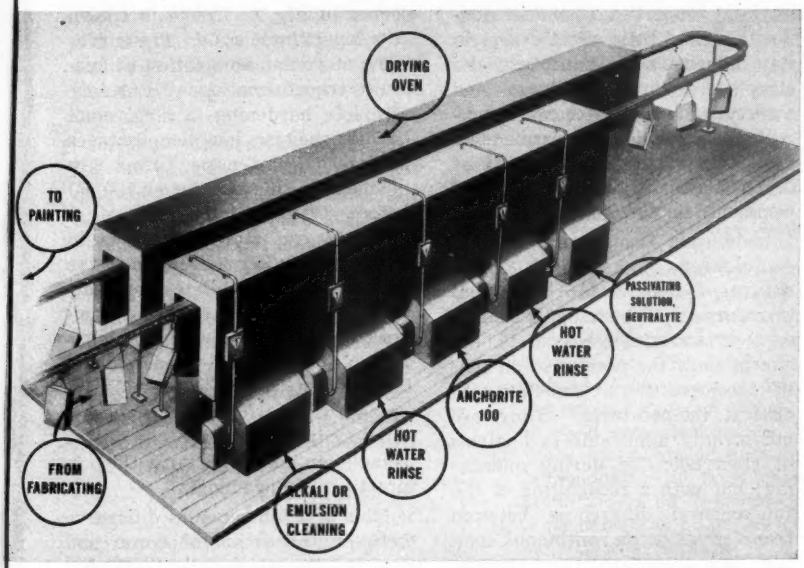
pens sold too cheaply to warrant stripping of the plate and replating; and the results would still not be certain. The manufacturer wanted a treatment that would remove the rust and rustproof the unplated area without affecting the chromium plate on the outside of the cap.

Five-Minute Treatment—Following successful treatment was suggested: Caps were placed in baskets and immersed for 5 minutes in a hot solution (180°F) of phosphoric acid conditioning compound which removed the rust. Following a water rinse at 180°F for 3 minutes they were phosphate coated to prevent further rusting and finally rinsed in hot water and dried with compressed air. This treatment had no effect on the chromium except for a slight beneficial brightening. The pen caps were then marketed.

Many adaptations of the immersion process for accelerated phosphate coating can be used to speed production and reduce handling operations. One common method is to employ an automatic conveyor system which dips in and out of each tank. The agitation produced insures full coverage of parts with virtually no handling.

Back and Forth—Here is an unusual adaptation of the immersion system developed by an appliance manufacturer in collaboration with Octagon's technical service department. This manufacturer used a painted 2-inch light-gage aluminum strip, which was received in coils. The ordinary procedure was vapor degreasing followed by a caustic soda etch and then enamel painting. Since he could no longer obtain the aluminum, and had to resort to steel, he needed an economical chemical treatment which could provide a corrosion-resistant paint anchoring base.

Following procedure was developed: After degreasing the coil is fed like a roll of movie film through a series of rollers which carries it down to the side of the phosphate tank, to within 6 inches of the bottom. Here it turns, runs parallel to the bottom of the tank up the side for 1 inch, where it makes another 180-degree turn and back to the other side of the tank. This winding back and forth permits a great length of continuously moving strip to be immersed for 3 minutes at 186°F. On emerging it passes through a set of rollers which removes excess liquid, and then through the water rinse and Neutralyte tanks, following the same winding path.



Five-chamber washing or spraying tunnel in a high speed production finishing line. Process solutions are recirculated, making it possible to treat the parts for a cost of approximately 5 to 8 cents per hundred square feet

Building Men to Discuss Noise

Construction men will discuss commercial, industrial and institutional aspects of noise and vibration at the 1952 construction conference May 19 at the Cleveland Engineering Society. Speakers will cover theory, design and practice in acoustics—sound and its control.

George H. Miehls, president, Albert Kahn Associated Architects & Engineers Inc. of Detroit, will discuss architecture, engineering and construction practices in his talk titled "Evolution in the Construction Industry." Keen Johnson, vice president, Reynolds Metals Co., Louisville, will make the first announcement of a new acoustical material and discuss uses of aluminum in the construction industry in his talk on "A New Approach to Acoustics and Construction." Nine other speakers will complete a program that ranges from medical aspects to a revised building code.

In addition to these sessions those attending will see an exhibit of acoustical materials and fastening systems, vibration dampeners and mufflers. Application of four types of acoustical materials will be demonstrated and a sound slide film on selection of acoustical materials is scheduled by Armstrong Cork Co.

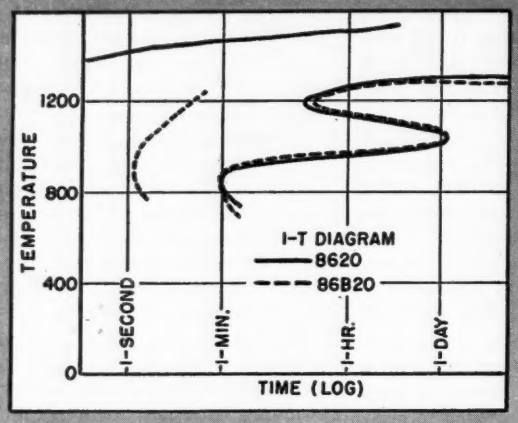


Fig. 1—Austenitic transformation of 8620 and 86B20

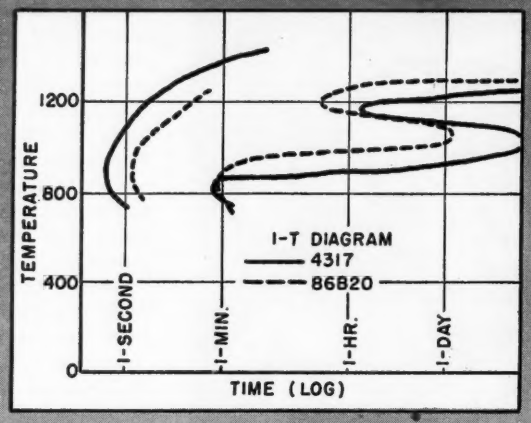


Fig. 2—Austenitic transformation of 86B20 and 4317

Heat Treating Boron Steels

. . . machinability can be improved

Medium-carbon boron steels, quenched and drawn, are no different to machine than the materials they replace. Carburizing grades have their peculiarities

By J. D. GRAHAM
Works Metallurgist
International Harvester Co.
Louisville

HARDENABILITY is the principal factor in selection of steel for automotive parts. On this basis boron steels have been thrown into production with unprecedented rapidity by many manufacturers. If a steel is proved capable of hardening to 90 per cent martensite in the critical sections of a part with the heat treat facilities available, metallurgists can be reasonably certain it will do the job.

Effect of addition of boron is to increase hardenability and apparently nothing else. Accordingly, in replacing nickel, chromium, or molybdenum with boron, certain effects of those elements are lost, such as retarding softening or resisting creep at elevated temperatures.

Heat treatment and machining of these steels present some problems—matters that should be reviewed and understood.

Hardness and microstructure are the governing factors in machinability of steels as they are with physical properties. Chemical composition is of little effect except in its influence on hardness and structure. Since hardness and structure in most cases are the direct result of heat treatment, a discussion of the heat treating of boron steels will pave the way for comments on machining.

Isothermal Transformation — A useful means of checking up on the nature of steel is the isothermal transformation chart, or TTT curve as it is sometimes called. These charts show the process of austenite decomposition at constant subcritical temperatures. They are not strictly applicable to analysis of steel behavior during quenching; but with a recognition of the fundamental differences between transformation on continuous cooling and transformation at constant temperature, it is possible to use the IT chart intelligently.

A chart for 8620 steel, with and without the addition of boron is shown in Fig. 1. Time is shown on a logarithmic scale. The curves show start and completion of austenite transformation. To achieve complete hardening, a steel must be quenched so low temperatures at which martensite forms are reached (in this case below 750°F) before transformation to other products can start. Increase in hardenability is readily seen in the drastic shift of the line representing the start of austenite decomposition. In this case the addition of boron more than doubled hardenability of the steel. (D_I increased from 1.75 to 3.65). Right-hand curve, however, indicates completion of transformation is practically unchanged.

This is a fundamental difference between the action of boron and that of the conventional alloying elements, which delay the start of transformation and also retard its progress. This difference is

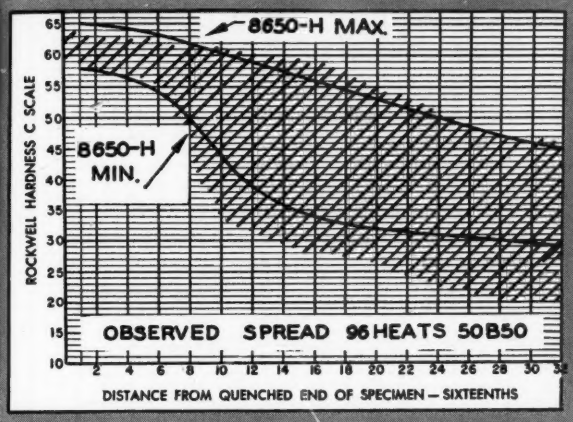

8650-H MAX.
8650-H MIN.
OBSERVED SPREAD 96 HEATS 50B50
ROCKWELL HARDNESS C SCALE
DISTANCE FROM QUENCHED END OF SPECIMEN — SIXTEENTHS

Fig. 3—Hardenability range of 50B50 (boron) steel compared with hardenability limits of 8650 H steel

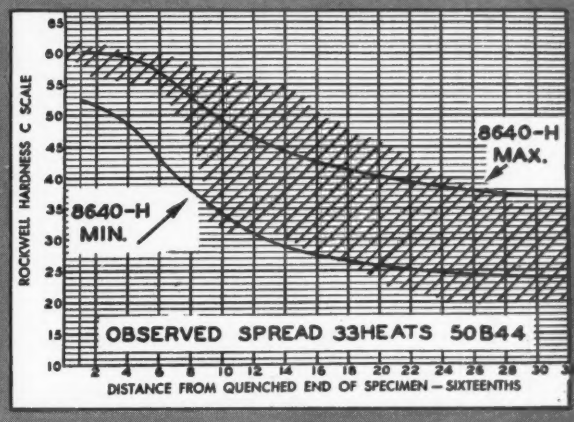

8640-H MAX.
8640-H MIN.
OBSERVED SPREAD 33 HEATS 50B44
ROCKWELL HARDNESS C SCALE
DISTANCE FROM QUENCHED END OF SPECIMEN — SIXTEENTHS

Fig. 4—Hardenability range of 50B44 (boron) steel compared with hardenability limits of 8640 H steel

significant principally in annealing and normalizing. It means in effect that cycles for annealing of boron-treated steels will in most cases be about the same as for the same steel without boron. Since in most cases the boron steel is substituted for a steel of higher alloy content, this may mean a reduction in annealing cycle which is appreciable.

Fig. 2 shows this same boron steel compared with 4317. While the 86B20 has greater hardenability than the 4317, it will transform completely in about 25 minutes at 1200°F instead of approximately 1¾ hours. When viewed from the standpoint of production costs, this is a worthwhile advantage of boron steels.

Medium Carbon Boron Steel—Fig. 3 shows the observed and quenched or Jominy hardenability range of 96 heats of 50B50 compared with the hardenability limits of 8650H. Note that the minimum heats take a drop in hardenability at about eight sixteenths. This is typical of the boron steels.

Many applications are not affected by this characteristic since the critical portions of the part being heat treated are represented with the first half inch of the Jominy curve. In the case of heavier sections, slightly higher carbon content is often specified to overcome this problem. Fig. 4 shows the observed spread of hardenability of some 33 heats of 50B44 compared with the hardenability limits of 8640H.

Keeping this in mind, boron substitutes for medium-carbon alloy steels can be picked on a basis of hardenability and hardened with no change in practice.

Critical points and temperature of martensite formation are practically unaffected by the addition of boron, so normalizing and hardening temperatures should be based on the conventional alloy content of the steel being treated.

Draw Temperatures Lower—Since boron usually replaces appreciable amounts of alloying elements which retard softening at elevated temperatures, it is often necessary to use draw temperatures from 50° to 100°F lower than with conventional steel of similar hardenability to maintain the same hardness level. There is no reason to believe that boron steels are particularly subject to loss of ductility in the so-called "blue brittle range" of 500° to 700°F.

If requirements are such that tempering in this range has been avoided—and it is well to do so where possible — lowering draw temperatures may in certain cases create a problem which can be overcome by selecting a higher carbon or higher alloy material which will permit maintaining draw above this range without sacrificing hardness.

The problem of temper brittleness may be slightly aggravated, since the boron replacement usually contains less molybdenum than the steel formerly used. This factor is probably minor, but for critical application in which tem-

(1) Medium-carbon boron treated steels are satisfactory substitutes for present alloy grades on a basis of hardenability. Heat treatment of these steels presents no problem.
(2) Carburizing grades may be successfully substituted with careful consideration for their peculiarities. If added hardenability of boron is needed at the surface, carbon content must be controlled for consistent results. Reduced carbon content of the core may be necessary to avoid excessive hardness.
(3) Many case-hardened parts are being made from steels with excess hardenability. In these cases available carburizing steels without boron should be investigated.
(4) Machinability of boron steels is substantially the same as that of the materials they replace.
(5) Machining problems may arise from substitution of lower carbon contents in the carburizing grades. These problems may be overcome by conventional corrective measures.

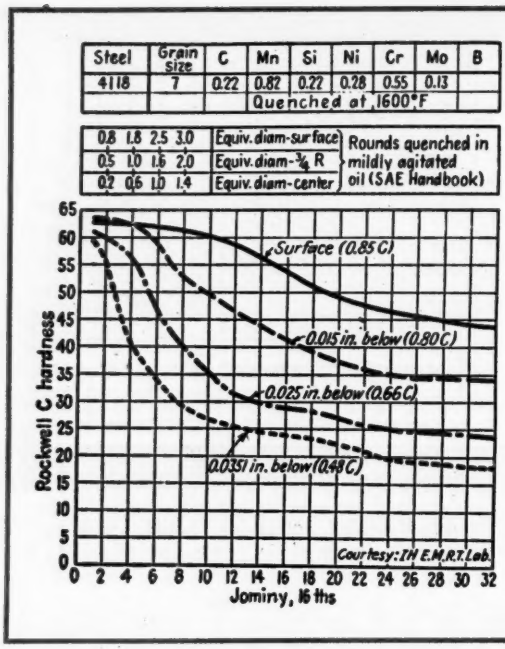

Steel | Grain size | C | Mn | Si | Ni | Cr | Mo | B
4118 | 7 | 0.22 | 0.82 | 0.22 | 0.28 | 0.55 | 0.13
Quenched at 1600°F
0.8 1.8 2.5 3.0 Equiv. diam-surface
0.5 1.0 1.6 2.0 Equiv. diam-¾ R
0.2 0.6 1.0 1.4 Equiv. diam-center
Rounds quenched in mildly agitated oil (SAE Handbook)
Surface (0.85 C)
0.015 in. below (0.80 C)
0.025 in. below (0.66 C)
0.035 in. below (0.48 C)
Rockwell C hardness
Courtesy: IH E.M.R.T. Lab.
Jominy, 16 ths

Fig. 5—Jominy hardenability of 4118 steel

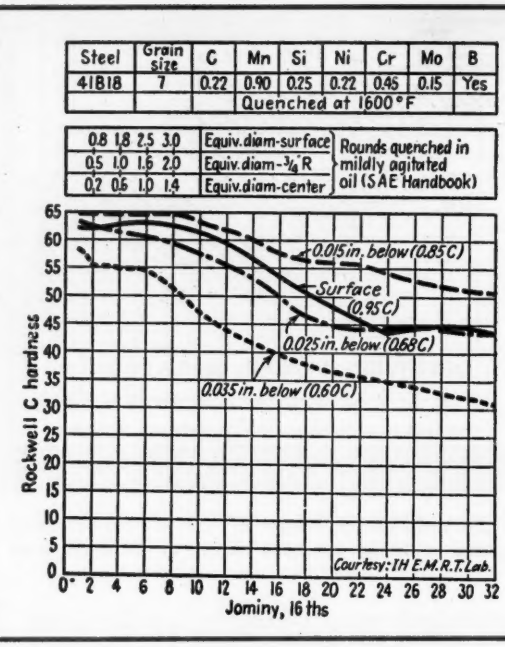

Steel | Grain size | C | Mn | Si | Ni | Cr | Mo | B
41B18 | 7 | 0.22 | 0.90 | 0.25 | 0.22 | 0.46 | 0.15 | Yes
Quenched at 1600°F
0.8 1.8 2.5 3.0 Equiv. diam-surface
0.5 1.0 1.6 2.0 Equiv. diam-¾ R
0.2 0.6 1.0 1.4 Equiv. diam-center
Rounds quenched in mildly agitated oil (SAE Handbook)
0.015 in. below (0.85 C)
Surface (0.95 C)
0.025 in. below (0.68 C)
0.035 in. below (0.60 C)
Rockwell C hardness
Courtesy: IH E.M.R.T. Lab.
Jominy, 16 ths

Fig. 6—Jominy hardenability of 41B18 steel

pering over 1000°F is employed, it may be advisable to quench from this temperature until more information is available.

Carburizing Grades — Relation between carbon content and ability of boron treatment to increase hardenability is recognized, but its specific effect on carburized work is still controversial. The relation results in the boron carburizing steels exhibiting excellent hardenability of the core, but questionable properties in the outer region of the case. This has resulted in widespread reports that boron steels are subject to excessive distortion, and a few instances where surface hardness could not be met.

Core hardness can be satisfactorily handled by care in selection of carbon content. Use of a carbon range of 0.13 to 0.18 per cent has in most cases been successful in reducing core hardness to normal levels and in reducing distortion to the level of previous steels used. Dimensional changes are sometimes different, the principal report being greater shrinkage of internal openings such as bores of gears, but these changes can be allowed for in machining. Care should be taken to make pilot runs to determine any necessary modification of green dimensions (dimensions prior to heat-treating).

Better Surface Hardness—Case hardness is a more difficult problem. Heat treatment can be modified to improve surface hardness somewhat. Boron does give considerable boost to hardenability up to about 0.85 per cent carbon and it is possible to control carburizing conditions to avoid higher carbon content. This is usually possible in gas carburizing by modification of atmosphere and in pack carburizing by change of compound type. Surface hardness is improved in carburized and direct quenched 50B15 gears by dropping from the 1700°F carburizing temperature to 1550°F before quenching.

Consideration is being given to providing low-alloy carburizing steels without boron that are within the ranges of alloying elements permitted by NPA and that have sufficient hardenability for many applications. For heavier carburized parts, the higher alloyed boron steels such as 94B17, 86B20 and others are being successfully used with consideration for the factors discussed above.

Machining Boron Steels—Little difference exists between boron steels and those they replace as far as machining is concerned. Steel is machined in three basic conditions: As rolled, as normalized or annealed (with or without forging), after quench and draw.

As rolled and normalized or annealed hardness and microstructure are important factors, since a great deal of steel is machined in this condition. Addition of conventional alloying elements to steel lowers the temperature at which pearlite forms, resulting in higher hardness on slow cooling, such as from the rolling operation or from the normalizing furnace. This effect is not produced by boron treatment, with the result that as rolled and normalized hardness levels are usually somewhat lower with the boron steels than with the materials they replace. This is true of boron additions to plain carbon steels and to low-carbon low-alloy steels. Some increase in normalized and as rolled hardness of higher hardenability materials may result from boron treatment.

An exception to this is the reduction in carbon content frequently specified in substituting a boron carburizing steel. In this case, considerable drop in normalized or annealed hardness may occur and poor finish and tool trouble may be encountered.

From data presented by the author at the 20th annual meeting, ASTE, Chicago, Mar. 17-21.

REVERE BRASS TUBE HANGS UP 25 MILES OF LIGHT

In the General Accounting Office Building in Washington there are luminous indirect fluorescent lighting fixtures which if put end to end would reach across country for 25 miles. This is possibly the most spectacular fact about the installation. So many lighting units are needed in this seven-story structure because it occupies an entire city block and has no court to admit daylight to interior areas. There are 10,000 employees, and large numbers spend all their working hours under electric illumination. The reflectors are made of extruded Plexiglas acrylic plastic, and deliver 90% of the light to the ceiling, from which it is reflected downward, preventing glaring dazzle spots. There are nearly 33,000 lighting units in the building. A Revere man who visited the office reports that the lighting is perfect.

The units or luminaires were made by the F. W. Wakefield Brass Company, Vermilion, Ohio, using Revere Brass Tube for the hanger stems. At one end the tube had to be threaded for a length of two inches and flared at the other. The stem is then chrome-plated. Brass lends itself ideally to these operations. Revere will gladly collaborate with you on the specification and fabrication of Revere Brass.

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Narrow Strip Mills Employ SINGLE-STACK ANNEALING FURNACE

Introduction of decarburizing elements are prevented by the use of oil seals between inner cover and base. Full convection system may soon be used by alloy manufacturers

SINGLE-STACK annealing furnaces with high convection gas circulating systems, high heat inputs, alloy inner covers and oil sealed bases have been widely adopted by the narrow strip industry according to J. L. Whitten, vice president, Lee Wilson Engineering Co. Inc., Cleveland. In speaking on this subject at the annual spring conference of the Association of Iron & Steel Engineers, Cincinnati, April 28-29. Mr. Whitten mentioned that three things are markedly different from the equipment used in larger strip mills.

1—All of the installations use oil seals between the inner cover and the base to eliminate the objections to the use of sand for sealing. In high-carbon strip annealing, the oil seal is a necessity for accurate atmosphere control and for eliminating the possibility of introducing decarburizing elements by partial pressure exchange.

2—Nearly all annealing installations in the narrow strip industry use alloy inner covers, most of 25-12 analysis. Since these plants do not produce plate from which inner covers could be made and since the inner cover construction at the bottom is expensive to replace, they have long since adopted the use of alloy covers. Life of these covers for older furnaces with low heat input has been from five years upward. As heat inputs have been increased, the life has shortened, but further study on the differential in temperature on the inner cover face between locations opposite tubes and between tubes for high heat input convection furnaces, has provided a solution by increasing the number of tubes in the furnaces, without increasing total input. This minimizes the temperature differential to a point that surface wrinkling has almost disappeared and longer life is assured. A decrease in furnace time of 10 per cent, and an increase in furnace production, have resulted from the use of more tubes without using any additional total fuel input.

3—The narrow strip industry is largely using the full convection system with the inner liner in the inner cover. Use of alloy covers gives a durable outer shell, and this offers a satisfactory arrangement for use of the inner liner. By definite test, the heating and cooling time is approximately 15 per cent shorter with the use of the inner liner than without it. If the inner liners distort in time, they are made from mild steel and can be removed, rerolled and reinstalled. If they are replaced, the expense is nominal. The design has been improved to allow the inner cover and the liner to move independently of each other for expansion and contraction. The inner cover lifts the liner with it when it is transferred.

Plates Perform Dual Function—The convector plates are best termed "compensating convectors," as the shape of the curved vanes is such as to compensate for the use of radiant heat in the outer wraps of the coil. The design of the plates is proposed to heat less by convection where radiant heat is more effective, and more by convection as radiant transfer is less effective. The shape of the vanes in the main is to maintain a constant mass velocity of the gases throughout the path against the coil edges except as convected as described above. The actual ratio, as best determined by theory and practice, is 25 per cent radiation and 75 per cent convection.

The fan drives use an impeller type wheel which moves approximately 8000 cfm at 10 inches static pressure. Most of the static pressure is consumed in achieving high gas velocities in the liner and then the convector plates. A diffuser system or straightening vane arrangement enables the fan to double the efficiency of operation that results from just blowing into an open chamber. The fan drive employs a standard motor and V-belt drive.

Drives Are Different—This type of drive differs somewhat from the unit motor and fan drives used in the larger mills but offers the use of standard motors and lubrication in case of power failure. The V-belt drive does not detract from the feature of base portability, so desirable in the larger mills; but the smaller mills have much less base maintenance because the coils are so much lighter and the absence of sand for sealing removes a great deal of fan bearing trouble. Therefore, repairs usually are made in place; but the bases could be moved if it were desirable to do so, by using quick disconnect couplings for the oil and deox gas lines.

Of special interest to alloy manufacturers is the possibility of using this same annealing system with modifications for annealing hot rolled coils of 14 per cent and 7 per cent chrome steel. Special fan wheels, operating at a speed of 1500 rpm are required for annealing temperatures of 1525°F as these materials are scaled when annealed, and as the scale must not be reduced, no atmosphere is used. All internal parts are made of 17 per cent chrome to resist oxidation. One such installation of three furnaces and five bases is now under construction, after the process had been tested in an existing installation ordinarily used for low-carbon steel. The charges will only be cooled before removal to approximately 1000°F, until the material becomes magnetic, so the base to furnace ratio is low.

PROGRESS REPORTS FAVOR EXTENDED USE OF NATIONAL CARBON IN BLAST FURNACES

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70 Technical Sessions, 150 Papers

World Foundrymen View Casting Advances

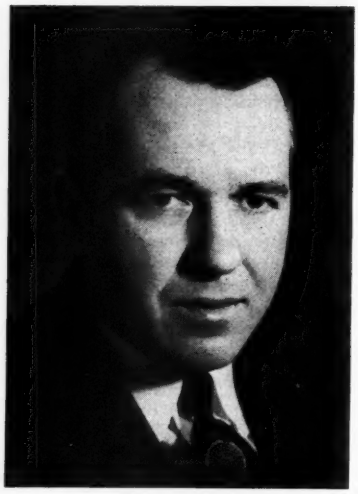
SHELL MOLDING, foundry safety and hygiene and industrial air pollution came in for the lion's share of attention at the 7-day International Foundry Congress and Exhibit which opened at Atlantic City May 1. The world foundrymen took in approximately 70 technical sessions covering nearly 150 papers and discussions during the Congress. About 200 foundrymen participated in the congress which had a total attendance of approximately 15,000 when it ended May 7.

The meeting was the American Foundrymen's Society's 56th annual event, and its international character is due to the fact that the AFS is a charter member of the International Committee of Foundry Technical Associations which annually holds an international congress. The world event is the third to be held in the United States, the last having been held in Philadelphia in 1934.

Other member countries of the International Foundry Committee include Belgium, France, Germany, India, Italy, Netherlands, Norway, Sweden, Switzerland, and the United Kingdom.

Many Metals Covered—The sessions covered the casting of various metals, including aluminum, magnesium, brass, bronze, malleable iron, gray iron and steel. Other subjects included refractories, foundry costs, statistical quality control, time study and methods, plant and plant equipment. There was widespread evi-

(*Please turn to Page* 122)



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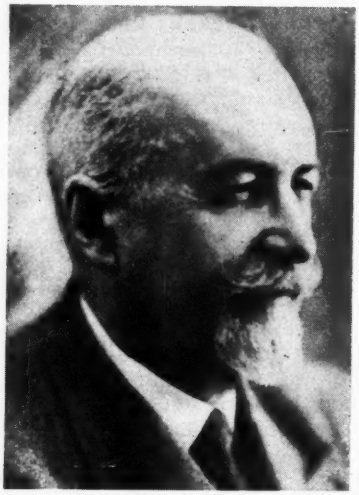

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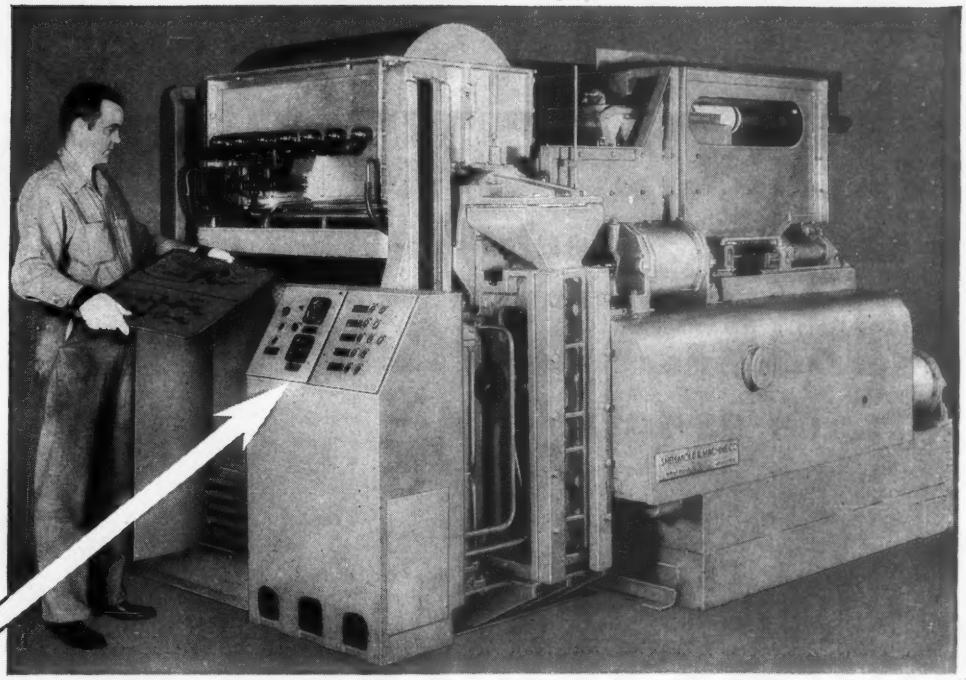

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CONTINUED FROM PAGE 91

PRODUCTION GAGING: MAXIMUM ACCURACY

backing off the wheel and stopping spindle on reaching finished size.

Quick Solution — Air-electric gages tied in with indicating lights for bench work constitute the bulk of Taft-Peirce Mfg. Co.'s line. Using a differential indicator, for example, one of the company's units can check the twist, bend and center distance in connecting rods without reference to hole size. These units work on either 100 per cent inspection or in a quality control program. One, two or three-dimension gages are made for checking the job in the machine. Development work on automatic air gaging equipment is in the windup stage on first units.

Electronic comparators, air gages and automatic equipment built by Merz Engineering Inc. offer a rounded line for equipment selection. A recent machine handles five rivet sizes for jet aircraft rotor disks. Sorting into classifications 0.0001-inch apart plus checking for length and diameter clicks along at 3800 parts per hour. Another unit that could hardly be accused of loafing checks and classifies piston pins, tappets and related parts at 2800 per hour. Size, length, taper, runout, spareness of head with body, hardness and surface finish get the full treatment at high speed. Electrical contact checking and sorting at 10,000 per hour in a new machine provides the user with the means for effecting considerable savings.

Gaging Steps Saved—Electronic measuring equipment, both bench and automatic, built by Brown & Sharpe takes care of a wide job range. Fixture, machine and bench measurements can be measured in units varying from 0.0001 to 0.00001-inch with an electronic caliper using a single master. A special unit built for a cutting tool manufacturer simultaneously checks surfaces of inserted tooth cutter for spareness, parallelism and size. Speed doesn't compare with automatic units but accuracy attained and elimination of some steps makes it a valuable unit.

Among automatic units built is twist drill inspecting and sorting machine for working with drills in the most critical size range, 1/32 to 1/4-inch. Machine checks about 4800 pieces per hour into four groups; tolerances can be set individually for point and shank ends. A fully automatic machine squirts out .30-caliber shells at 16,500 per hour, inspecting four dimensions.

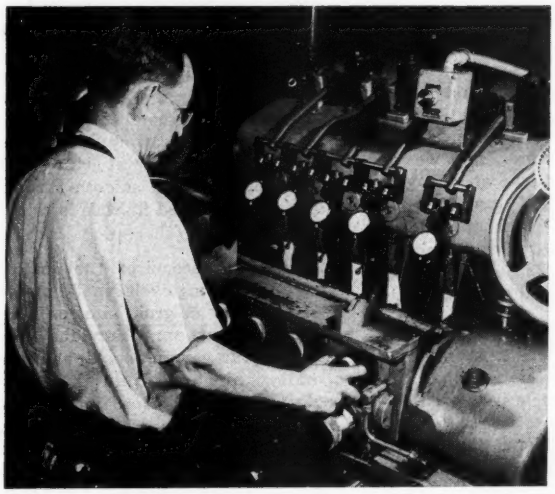
For Small Plants—Small plant applications requiring automatic inspection and segregation can fit a table model unit built by Arlin Products Inc. into their processing setup. Either manual or hopper feed drops parts like rivets, bushings, firing pins into a slotted disk that is propelled across a gaging surface. Manual feeds yield 3500 parts per hour and hopper feeds can attain up to 10,000.

Larger units can be combined with floor hoppers that can feed two or more smaller rotary hoppers and control level of parts in the smaller units. Feeding units are made by the company. Gaging heads operating at 30 megacycles sort up to 20,000 pieces per hour. Segregation varies from a minimum of three classifications (over, o.k. and under) to number desired for a specific job.

Pneumatic comparator gages for measuring inside and outside diameters using single or multiple heads are supplied by Moore Products Co. to the bearing, automotive, aircraft industries and others. Many applications are tied in with quality control systems.

Frictionless Reed mechanism and weightless light beam lever arm combine to cover numerous small gaging applications for Sheffield Corp.'s line. Precisionaire installations range from single air columns for simple, accurate checks to multiple column installations that check more than thirty dimensions at one time.

Multiple Readings—Crankshaft,



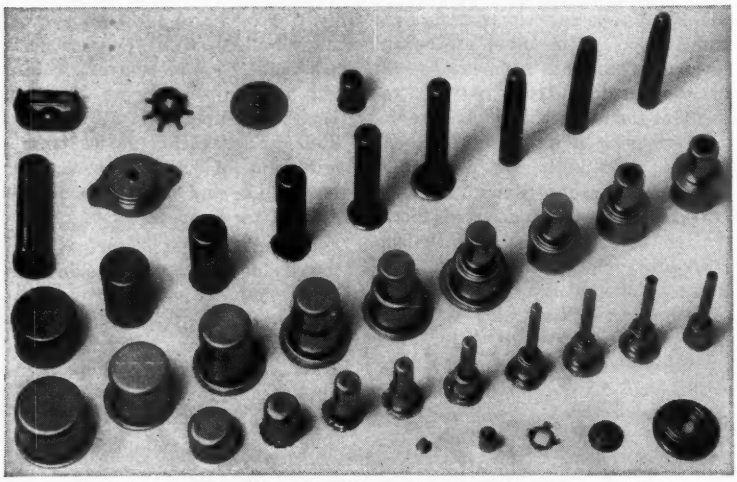
Checking tolerances of five main bearings on the camshaft in the machine illustrates a growing gaging trend

Semiautomatic setup measures and sorts straight roller bearing rolls into five sizes only 0.00002-inch apart

BRIDGEPORT BRASS COMPANY

COPPER ALLOY BULLETIN

"Bridgeport" BRASS CO. MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND.—IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL



Surprisingly complicated items from sheet metal can be made on eyelet machines. Courtesy The Formatic Company, Naugatuck, Connecticut.

Cutting Costs Through Eyelet Machine Operations

If you have occasion to use, say, over 50,000 pieces of a fairly small article made from sheet metal, it is worthwhile to investigate eyelet machine production as against that made by single press operations.

The eyelet machine was originally designed for making small metal eyelets for shoes. With the development of larger machines, other items such as screw shells and socket shells and stampings were added. Today, standard eyelet machines can handle metal up to about .050" thick and can draw shells up to 3" deep. The eyelet machine can combine such operations as blanking, cupping, drawing, piercing, trimming and even roll-threading and side piercing.

Long Runs

Economy of eyelet machine operation depends on long runs. Tool costs are higher than for the single press method because more steps are performed in bringing the metal to the final shape in gradual stages. Also, setting-up time is generally longer, taking from two to three days. For jobs that can use an eyelet machine day in and day out, a remarkably low cost per piece can be achieved which more than offsets the higher tool cost.

Other advantages are less waste of material when getting started with a new job. In a matter of minutes you can tell if the finished product is correct as to dimensional specifications. On the other hand, it may take weeks to obtain the finished part which has to undergo the number of operations required with single press operations. This saves material by keeping spoilage to a minimum because of wrong tooling or incorrect radii and other dimensions.

Other economies are 1. no intermediate annealing operations; 2. no handling of separate batches for each operation; 3. no danger of injury and accumulation of dirt on parts while waiting for available presses; 4. better control on number of pieces required. Once the job gets into production, finished items leave the eyelet machine in a constant stream. This means quicker deliveries, less handling and a correspondingly lower unit cost.

Expert Tool Designing

From the production standpoint eyelet machine operation is more difficult than single press operation. The eyelet machine toolmaker is a highly skilled mechanic, who must be a master at tool construction capable of performing all of the operations which the machine can do. In designing tools the increase in length of a shell is the result of reducing the outside diameter without appreciably thinning the wall. Operations must be so balanced that the metal does not become hardened too much in the early stages; otherwise, it will be too hard in temper to withstand subsequent operations. Deep shells are generally run with a slight flange to permit easy stripping and for freedom from edge cracking.

On long runs for brass or for ferrous materials, carbide dies are often used to withstand wear and permit closer tolerances. Good lubricants must be used to reduce friction between the metal and the dies.

Correct Temper and Quality

The copper-base alloy must be free from imperfections such as spills and blisters. The grain size must be comparatively fine in order to impart strength which is necessary to resist breakage when the metal stretches during forming and drawing operations. Some jobs require metal with small grain size because a smooth surface suitable for polished finishes is called for.

Bridgeport recognizes the importance of supplying eyelet metal of the correct temper or grain size for each job, uniformity of anneal, and the highest quality. In general, eyelet machine operations are so severe that poor quality metal will cause interrupted production and excessive spoilage. When working on a new job, the Bridgeport Laboratory will be glad to help specify the correct alloy and temper which will give the highest performance. (8339)

CAUSES OF CORROSION

This article is one of a series of discussions by C. L. Bulow, corrosion metallurgist of the Bridgeport Brass Company.

DEZINCIFICATION CORROSION (Cont'd)

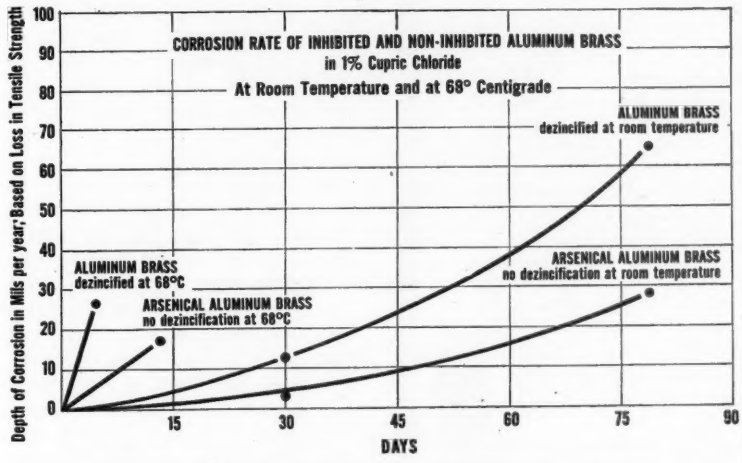
Dezincification Inhibited in Aluminum Brass

Aluminum brass (76% copper, 22% zinc and 2% aluminum) in tubular form has been extensively used for over two decades as piping and tubing in condensers and numerous types of heat exchangers because of its good corrosion resistance towards rapidly-flowing sea water. It was recognized that this alloy was susceptible to dezincification when the water velocity was low and when much debris, mud, etc., accumulated on its surface. Consequently, this alloy needed protection against this action through the addition of a dezincification inhibitor.

Arsenic has proved very effective in preventing dezincification in aluminum brass. About .02 to .04% arsenic is generally sufficient to prevent dezincification in fresh and brackish waters and in sea water.

Data obtained from several investigations involving sea water, well water and 1% cupric chloride solution all revealed that 0.02% arsenic in aluminum brass effectively inhibited dezincification. The results of these tests are shown in table and chart.

Samples were tested under both laboratory and service conditions. The 18BWG non-inhibited aluminum brass was perforated by dezincification in two years. The 18BWG arsenical aluminum brass showed no signs of dezincification after 13 years of service.



Type of Water	Aluminum Brass	Arsenical Aluminum Brass
Sea water	.025 ipy (dezincified)	.002 ipy (no dezincification)
Well water	.46 ipy (dezincified)	.0015 ipy (no dezincification)

NEW DEVELOPMENTS

This column lists items manufactured or developed by many different sources. None of these items has been tested or is endorsed by the Bridgeport Brass Company. We will gladly refer readers to the manufacturer or other sources for further information.

Inexpensive Stroboscopic Unit gives 60 brief flashes of light per second when connected to ordinary 60 cycle power line. Lamp is replaceable standard neon bulb, and housing is the size of standard 2 cell flashlight. It may be used to check speed of rotation of motors, machines and other devices. **No. 1229**

Electron Microscope is said to have screen magnification continuously variable from 1000X to 60,000X. Has a beam oscillator for rapid determination of exact focus, and is reported to have an extremely large field which permits recording in a single photograph areas which normally require a mosaic of six individual sections. A roll film camera using 35-mm. film is incorporated; plate camera is available as an accessory. **No. 1230**

Emergency Light plugs into any 100 volt AC outlet. Powered by a dry cell battery, the unit instantly lights when there is an interruption in power circuit. The flood light beam is claimed to be rated at 21 cp and is focusable in any direction. DC model is available. **No. 1231**

Quick Connectors for attaching or detaching lines to other lines are said to be simple to operate. It is claimed that they can be instantly joined—even in the dark—by just a turn of the fingers. Once joined they cannot come apart until intentionally disconnected. Made of corrosion-resistant manganese bronze, the connectors come in all sizes and types—fast or fixed eye hooks, swivel hooks, fixed jaws hooks, floor or platform fittings, and are said to have high safety factor over their rated safe working load. **No. 1232**

Protractor of transparent plastic is said to be convenient time-saving device for designers. A quadrant protractor, it serves also as a center finder, a ruler with 1/16ths of an inch on one arm and 1/10ths scale on other, a compass. Circles can be accurately drawn with 1/16" variations in radius up to 12" diameter. **No. 1233**

Circuit Extender for bringing light, power or heat to work. Collapsible and portable, it is said to include a power and light unit, a strip of flood lighting and a strip of infra-red heating units. Swivel-mounted on a tubular steel carriage, the unit can be locked into any horizontal or vertical position. Unit comes with 21-ft. thru-conductor cable and carries an approved rating for 20 amp. loads for 115 or 220 volts. **No. 1234**

Labeling Tape made of two layers of acetate is said to be a pressure-sensitive, waterproof, smudge-proof method of marking parts. Available in four colors, the tape can be marked by pressure with pencil, stylus or other blunt instrument. Tape will adhere to any hard surface, and can be removed without leaving residue. Tape may be transferred many times without losing its adhesive qualities. Available in 400" and 800" rolls in widths of ½", ⅝", ¾", 1" and 1½". **No. 1235**

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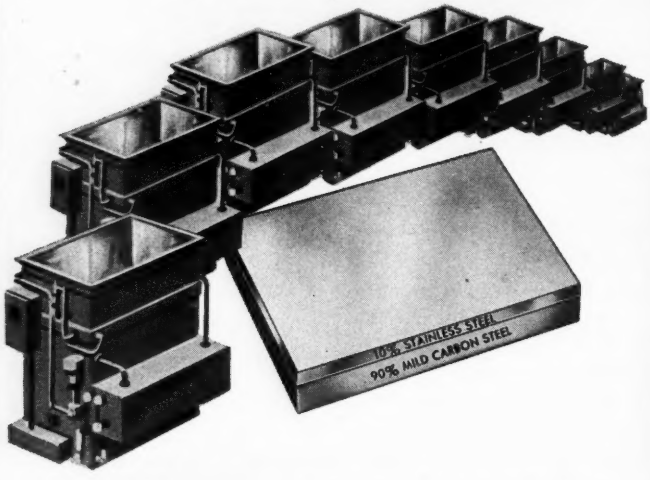

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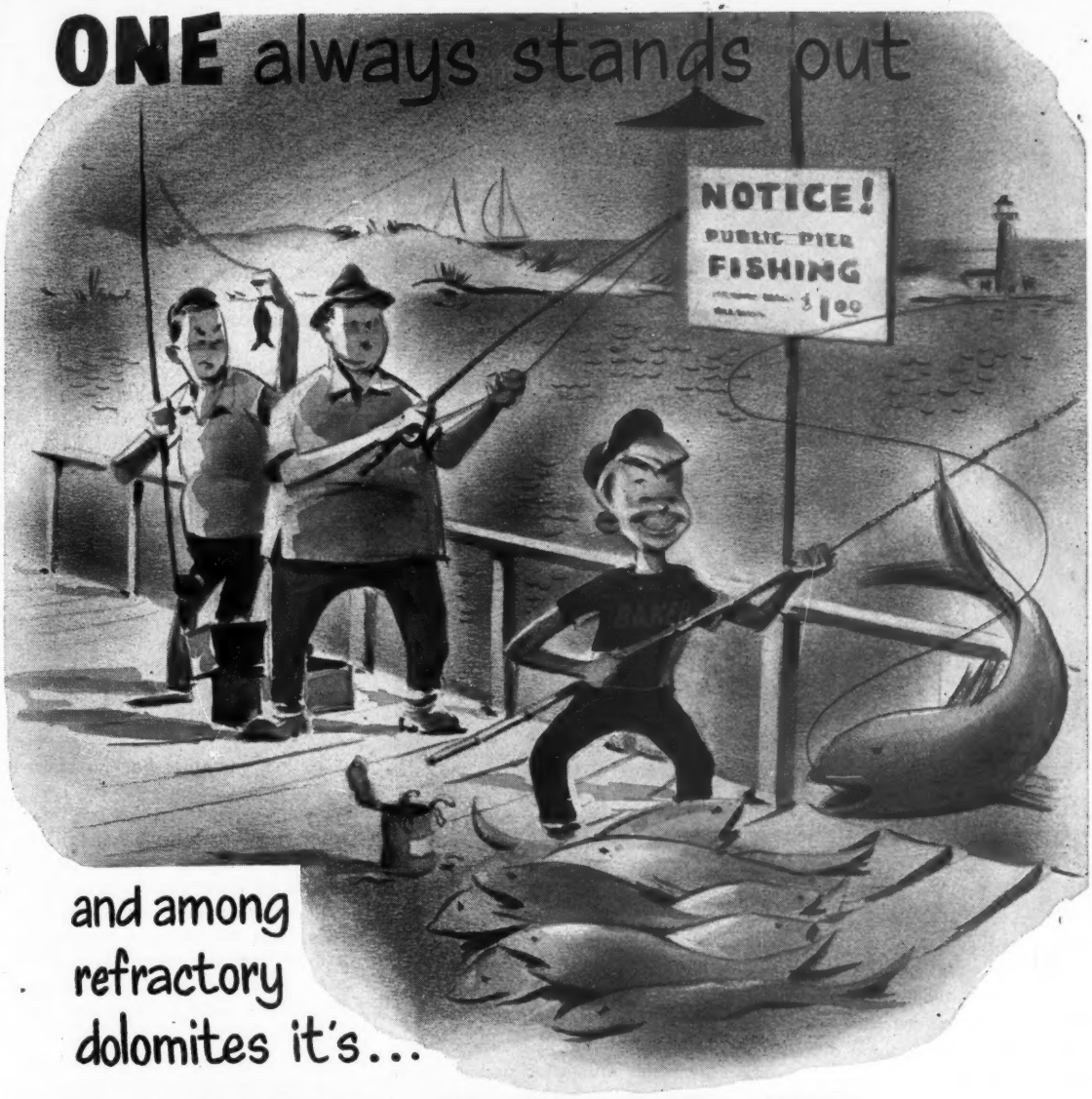
camshaft and engine blockchecking machines are among the more elaborate multiple checking installations. One such unit reads three points simultaneously on each of five main crankshaft bearings and has an airsnap for checking pin bearing diameters at two points. These units can be tied in with a plant's automation, eliminating bottlenecks with as few as 10 per cent of the inspectors formerly required. Crankshafts within manufacturing tolerances can be color coded for future selective assembly with bearings. Readings on the multiplicity of tubes often used are no problem. The floats form a line graph readable at a glance. Automatic units can segregate pieces into about 30 classifications at rates up to 4500 per hour.

Answers Available—Many gaging solutions are available. It merely requires getting in touch with the right manufacturer to get the answer to many seemingly impossible gaging questions. Gagemakers feel they have caught up with automatic production machinery by providing equipment that works in tenths of thousands at rates fast enough to eliminate inspection bottlenecks. Many potential gage users haven't taken advantage of the better and faster equipment available.

Some gage builders believe the trend toward gaging control at the machine is in for a big spurt. Either manual or automatic inspection represents locking the barn after the horse is stolen, they say. After the piece is made, it's too late to find out if it was made correctly. Machine control, still in its infancy, will grow but no one can accurately predict what percentage of output fits into this program. Grinders already have this control as do some multiple spindle automatics.

For the present a better understanding of what gaging will and won't do is needed. In the words of one gage maker, "You can't inspect quality into a part. Poor gages at the machine and good gages in final inspection certainly aren't the answer. If you want to improve product quality, give the man at the machine the best gaging equipment you can buy. It will be the cheapest investment you ever made."

ONE always stands out



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Samples of AlSiMag Cores from sizes in stock are sent free on request. Test samples made to your specifications at reasonable cost. Write for samples. Test them in your own foundry. Keep a record of the results. You will see, as other foundries have, that AlSiMag Cores pay for themselves many times over.

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Steel Research Keeps Pace

Research in steel and the materials for steel is keeping pace with the tremendous expansion of the steel industry. This was the conclusion expressed by Dr. R. E. Zimmerman, consultant to U. S. Steel Co., when he addressed the annual symposium of the Engineers Council of Houston.

Dr. Zimmerman pointed out that research continued even through the severe depression years of the 1930's when steel production sank to a low of 15 million tons. The many advances made during that period were vital to the development of military equipment used to win World War II.

Solving Shortages—The speaker observed that production has necessarily been a primary consideration during the unprecedented demand for steel since the end of that war. As a result, much of today's research is directed toward solving shortages of critical materials threatening capacity operations.

As an example, he emphasized the present shortage of scrap, which has dictated use of more blast furnace iron when available. This is bringing intensified research to bear on all elements of blast furnace operation. In another case, loss of Russia's manganese has stepped up research on processes for recovering manganese from open hearth slags and lean domestic ores.

Among the industry's emergency accomplishments were cited development of national emergency steels during World War II and present application of boron steels. Both moves stretched critical alloying materials at a time when they were in extremely short supply. Use of boron in certain steels is conserving considerable amount of molybdenum and imported chromium and nickel.

Less Tin; Better Plating—Reviewing developments in tin plate, Dr. Zimmerman referred to an investigation by Army Quartermaster Corps that concludes useful life of tin can food containers has been increased by at least a third —and in some cases more than doubled—in the past two decades. He also recalled that when Far Eastern tin producing areas fell

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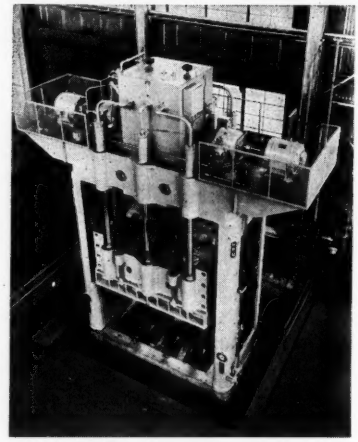
to Japan, a process for electrolytic tinning requiring less than half the usual amount of tin had been developed and was ready for production. Subsequent work on this method now permits production of coating that requires as little as one-fifth the amount of tin formerly used.

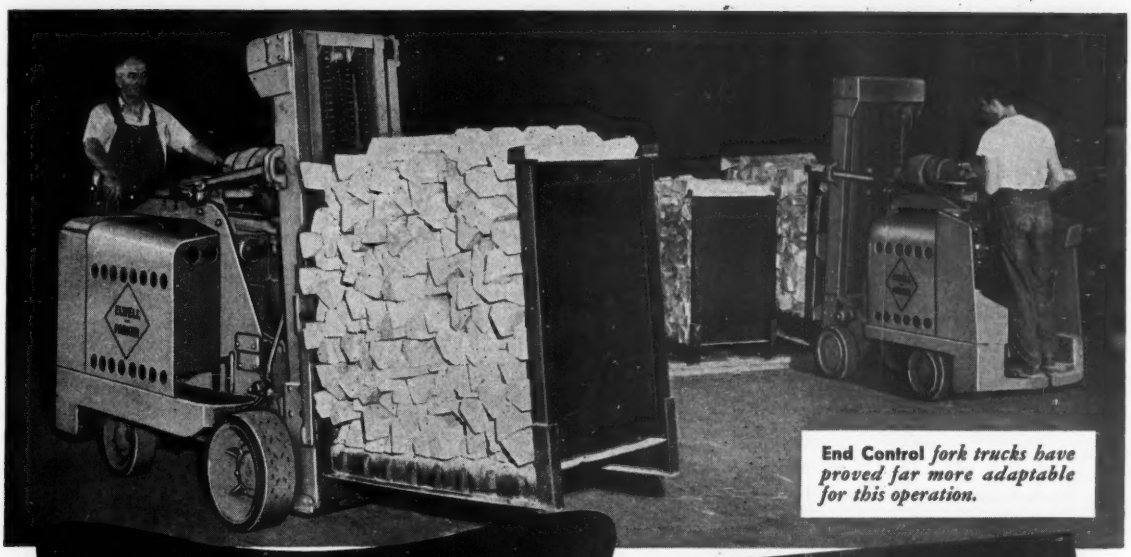
The research executive outlined recent developments in heat treating processes that have resulted in higher quality, more versatile steels. In some cases, this work enabled treatment of carbon steels to serve purposes for which short alloy steels are specified. In stainless steels, he noted recent announcement of a special stainless chromium grade for producing better quality television tubes. Another product is the relatively new stainless W, a steel using low percentages of critical titanium and aluminun, capable of an ultimate strength of 180,000-190,000 psi.

Inevitable Blend—Dr. Zimmerman directed U. S. Steel's research activities for 20 years, retiring recently as vice president, research and technology. He is confident that although some of the industry's research efforts are inspired by the national emergency, they inevitably blend into work on civilian requirements. "For example,



Blankholder to Holland

This 750-ton blankholder press will be used by Automobielfabriek N.V., Einhoven, Holland, for stamping truck body parts. Shown here assembled in the pit at Hydraulic Press Mfg. Co.'s plant No. 2, it was tested before being packed for shipment. Bed size is 144 x 84 inches, stroke 56 inches. Press reaches 31 feet above floor



End Control *fork trucks have proved far more adaptable for this operation.*

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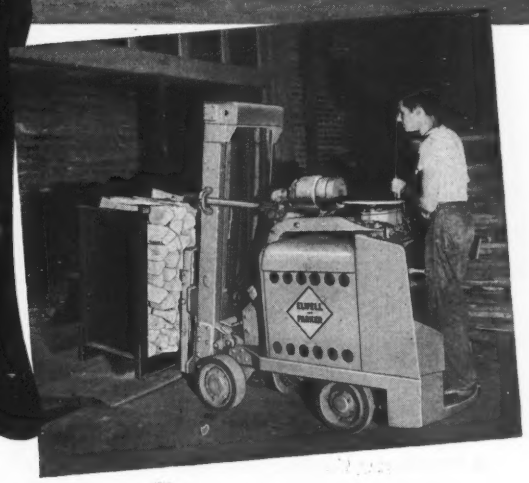

"More Magnesium for Jet Aircraft and Guided Missiles!" To meet that urgent need, a prominent magnesium company has accelerated production at its 29-acre plant. Elwell-Parker electric fork trucks play a major role in this all-out job.

Ingots stream steadily from the smelting and pouring departments to a large central depot. Because of their light weight, the ingots are readily assembled into master unit loads on special steel skids. Agile Elwell-Parkers then pick up the loads as fast as formed and express them to storage or directly into freight cars.

The three E-P trucks can handle more tonnage in less time than could 30 men with hand trucks.

On critical defense operation such as this, the famed dependability of Elwell-Parker trucks really pays off. Built-in quality insures 15 to 20 years of *steady* truck service. Easy accessibility of all parts simplifies preventative maintenance that assures dependable and continuous performance. For advice about your specific needs, request Elwell-Parker's *Industrial Logistics Service.* Write The Elwell-Parker Electric Co., 4103 St. Clair Avenue, Cleveland 3, Ohio.

NEW CATALOG

describes the E-P line in detail. Send for your copy NOW.

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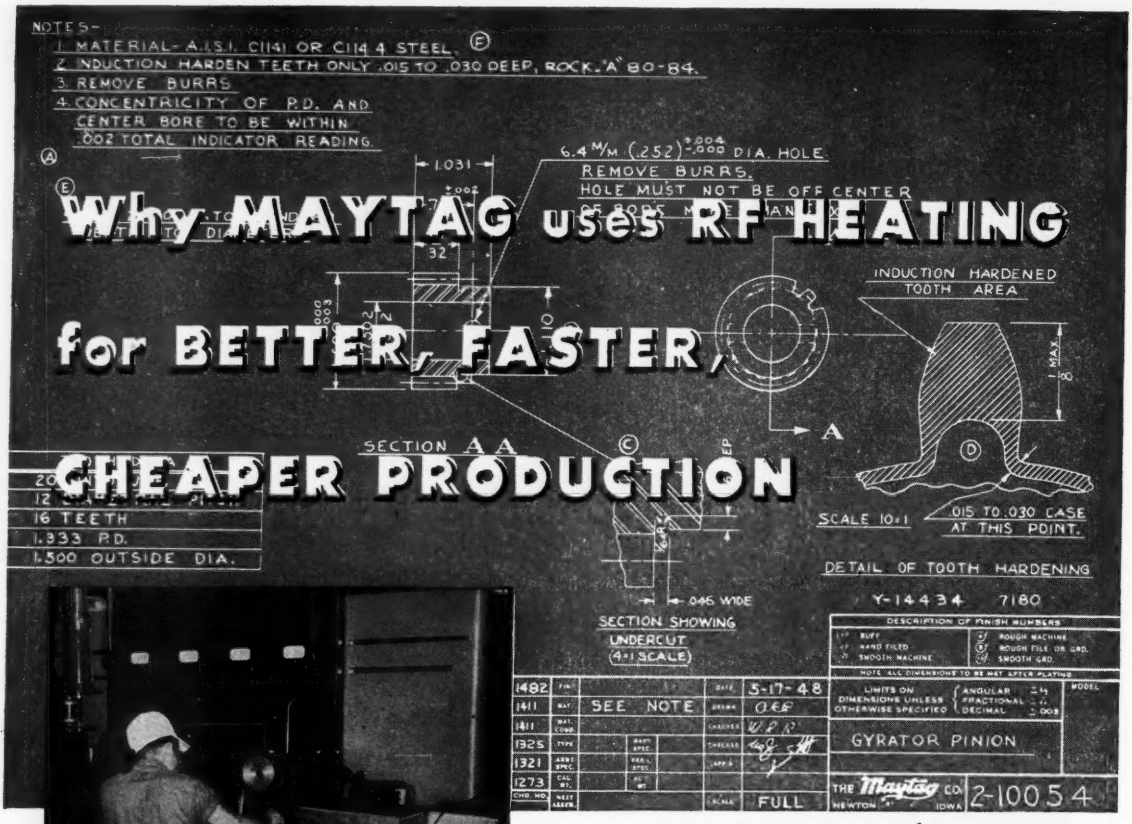

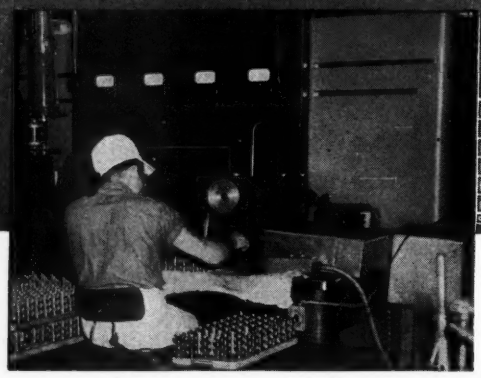

● The Maytag Company has found, for fast production at low cost and high quality, Westinghouse RF Heating installations are the answer.

The installation of a process using two 20 KW-450 generators—for both spline and straight shaft hardening—has paid for itself in *less than 3 months!* This was shortly after World War II, and since then continued use has piled up real profit in savings.

In building a new plant for production of a completely new line of automatic washing machines, Maytag turned to induction heating for brazing and hardening . . . and they specified Westinghouse. A 50 KW and 10 KW RF generator, with associated work handling equipment, are now accounting for still further savings and continued high quality. That's why Maytag says that not only is the Westinghouse RF process the best method for heat treating production parts, but, also, "it produces precision work at the price of rough and ready work."

As we helped Maytag, let us help you solve your problems of increased production at low cost and with high quality. By all means, investigate the possibilities of installing Westinghouse RF Heating.

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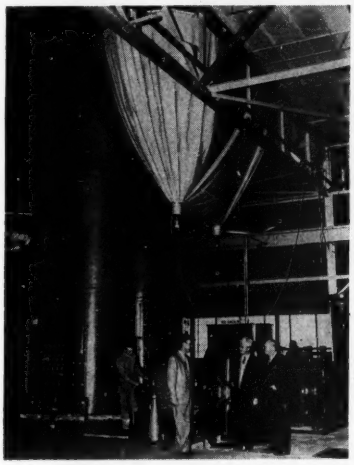
J-02241

INDUCTION HEATING

he says, it makes little difference whether high temperature steels are developed for jet engines or gas turbines to be used in combat or passenger planes. The problems are substantially the same and the data are interchangeable."

Oxygen by Pipeline Delivery

Anticipating the expanding needs of the Southwest's industrial development, Houston Oxygen Co. has placed in operation its new million-dollar plant for producing pure liquid oxygen and liquid nitrogen, and pure oxygen, nitrogen and argon gases. Simultaneously, meters started ticking on what is said to be the world's first pipeline to supply multiple industrial customers with pure, dry oxygen gas.



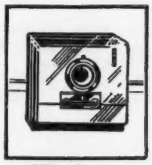
CENTRAL SYSTEM LINES
. . . no more cylinder switching

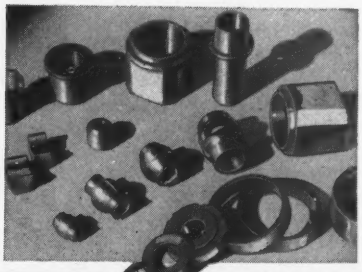
From the company's new plant, located in the western section of Houston, the line runs southeast to supply large plants on its route. Rights of way have been granted to extend the pipeline another 4 miles.

The line operates under 100 psi pressure, although it was tested at 200 psi. Dry oxygen gas of 99 per cent or better purity is delivered to customers, each of whom has a meter for measuring consumption.

A. K. Smith, president of Houston Oxygen Co., says the economical advantages of installing central system oxygen and acetylene lines with industrial plants using welding and cutting operations are

Ideal for certain applications


Washers



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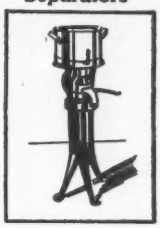
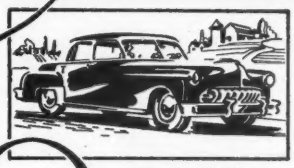


Business Machines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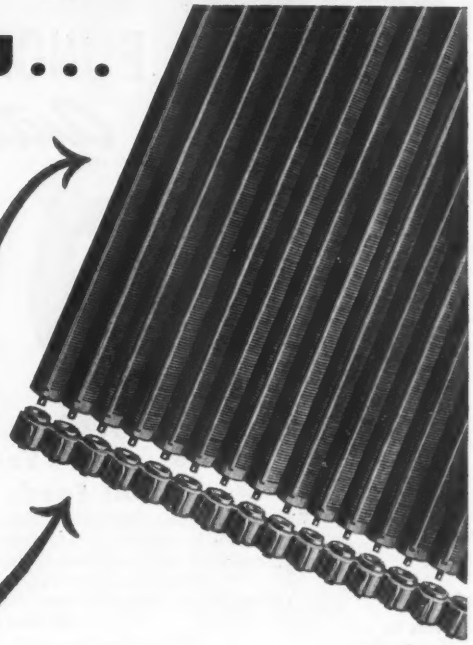
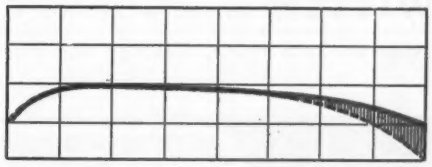
the long-life grids now contain SILVIUM —an alloy of silver, lead and other components—which make them highly corrosion resistant. Top conducting bar is heavier.

... with the New Polyethylene insulating tube sealer
An insulating sealer for the bottom of the tubes. Acid-proof, non-corroding plastic it fits snugly into slotted tubes of positive plate, and reduces loss of active material. Even the small sediment deposit of the past is reduced 50%. Thus, more active material remains available, and the high battery capacity is sustained for longer working life. (See chart at right.)





PERMANIZED NEGATIVE PLATES
Improved processing, a result of Exide Quality Control assures uniform plates with higher electrical efficiency. These negatives, teamed with the improved positive plates, give you a well-balanced combination for hard service and long life.

NEW SEALING COMPOUND
Through the cooperative efforts of Exide Laboratories and the Franklin Institute, a new homogeneous compound was developed. It makes a permanent seal between the jar and cover, resisting shock without cracking in high or low temperatures.

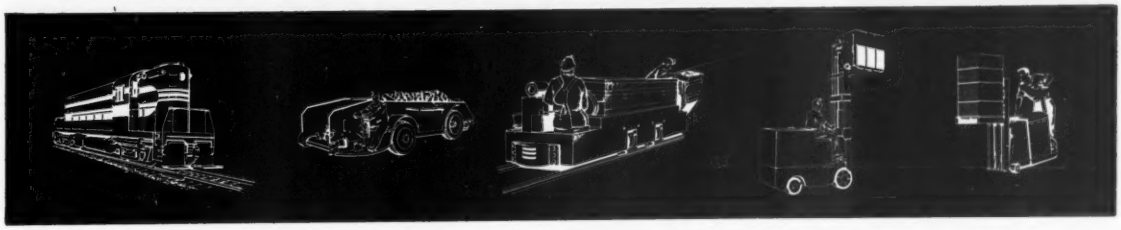
SEAMLESS SHOCK-PROOF JAR
Made of high quality rubber. A scientifically selected combination of tensile strength and elongation provides a sturdy jar built for long life and heavy-duty service.

CORROSION-RESISTANT TRAY GUARD
A plastic acid-resistant steel tray coating with high insulating quality and ability to withstand hard knocks.

NEW UNBREAKABLE PLASTIC VENT PLUGS
Made of unbreakable polyethylene. Can be quickly and easily removed to add water.

Types and sizes for storage battery applications for every heavy-duty service.

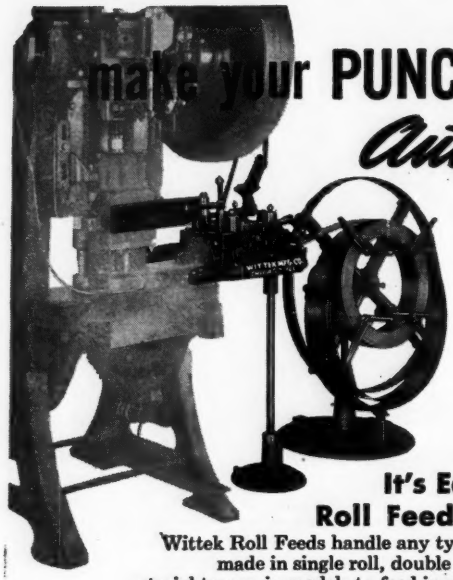
Write today for further information.



THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 2

Exide Batteries of Canada, Limited, Toronto

"EXIDE-IRONCLAD" and "PERMANIZED" *Reg. Trade-marks U.S. Pat. Off.* "SILVIUM" *T.M. Reg. applied for*



make your PUNCH PRESSES *Automatic*

It's Easy...with WITTEK Roll Feeds and Reel Stands

Wittek Roll Feeds handle any type of coiled strip stock and are made in single roll, double roll, and compound types with straighteners, in models to feed in any of four directions. They are reliable and accurate with simple, quick adjustment of feed length. Standard sizes and models meet a wide variety of press size and capacity conditions.

Wittek Reel Stands facilitate handling coiled stock.

*Write for full particulars

WITTEK Manufacturing Co.

4328 W. 24th Place, Chicago 23, Illinois

Automatic ROLL FEEDS AND REEL STANDS WMCO

25 YEARS OF LEADERSHIP IN FASTENINGS OF STAINLESS STEEL

To YOU, Anti-Corrosive's 25th Anniversary is an assurance that the oldest, largest and best known firm dealing exclusively in stainless steel fastenings is best suited to serve your needs in this field.

Still Plenty of Fastenings IN STOCK

For quick delivery of stainless steel fastenings, check Anti-Corrosive first, since many stock items and alternates are on hand!

FREE - A - N Fastening Selector !

Write for handy slide Chart No. 52S — instantly identifies A-N Nos. pertaining to stainless fastenings, gives sizes, other data. Catalog available.

1927–1952

Anti-Corrosive Metal Products Co., Inc.

Manufacturers of STAINLESS STEEL FASTENINGS

CASTLETON ON HUDSON, NEW YORK

still to be realized in the full measure. When the usual individual cylinders no longer need to be handled, regulators and hoses no longer switched from empty to full cylinders and lost production due to such delays no longer suffered, savings in labor alone will represent a direct and sizable contribution to profits. And these factors do not even consider the greatly reduced hazard.

Use of such a central system oxygen and acetylene line within industrial plants should also be greatly increased by the firm's new facilities for providing customers not served by the pipelines with large banks holding as many as 50 permanent tubes, each 20 feet long, for storage. Heretofore, smaller banks were mounted on large, flat trailer trucks. When these were empty, they had to be towed back to the oxygen plant for refilling, meantime being replaced by similar equipment.

Lapointe Passes Half Century

Broaching has become a major factor in rapid and precision industrial production during the 20th century. One of the firms responsible for the rise in importance of this metal shaping process, Lapointe Machine Tool Co., celebrates its 50th anniversary this year—at a time when many of its processes have assumed increased importance because of their contributions to several phases of defense production.

Lapointe was incorporated in Boston in 1902. A year later, the firm moved to its present site in Hudson, Mass. Among its important tooling marks, the company lists the screw-type broaching machine, introduced during the first year of operation. After 1923, the ordinary metal shop could do its own broach sharpening with a unit developed by the company. In 1925, Lapointe introduced the Rotor-Kut, a machine made to handle primary applications, particularly on malleables and forgings. Its first automatic indexing and turret machines made to handle multiple operations and multiple cuts were marketed in 1941.

Important military applications of the broaching process include broach-rifling gun barrels to speed

THIS IS THE CUTTING FLUID YOU TOLD US YOU NEEDED

YOU WANTED STRENGTH OF FILM
which would give you longer tool life

YOU WANTED LUBRICITY
to withstand pressure and reduce friction

YOU WANTED VERSATILITY
one cutting fluid to do 90% of all jobs

YOU WANTED GERMICIDAL PROPERTIES
no rancidity, freedom from skin sores

YOU WANTED COOLER WORK
which could be handled bare-handed

YOU WANTED LOWER COSTS
how's 8¢ a gallon, in the machine?

THE ANSWER IS:

ANTISEP

ALL-PURPOSE BASE

—not a mere water soluble oil, but a fortified concentrate scientifically developed to give you "100 oils in one!"

ANTISEP "saves the day" for Cleveland valve manufacturer—cuts cost 50%!

After several prominent cutting fluids had failed to meet requirements, this concern decided to try Antisep, diluted 25 to 1, in the machining of valve stems from 416 stainless steel. Warner & Swasey 5-spindle automatic screw machines were used. Result: lower costs, improved tool life, greater uniformity in pieces machined. Parts come off cool, permitting higher speeds and heavier cuts.

E. F. HOUGHTON & CO.
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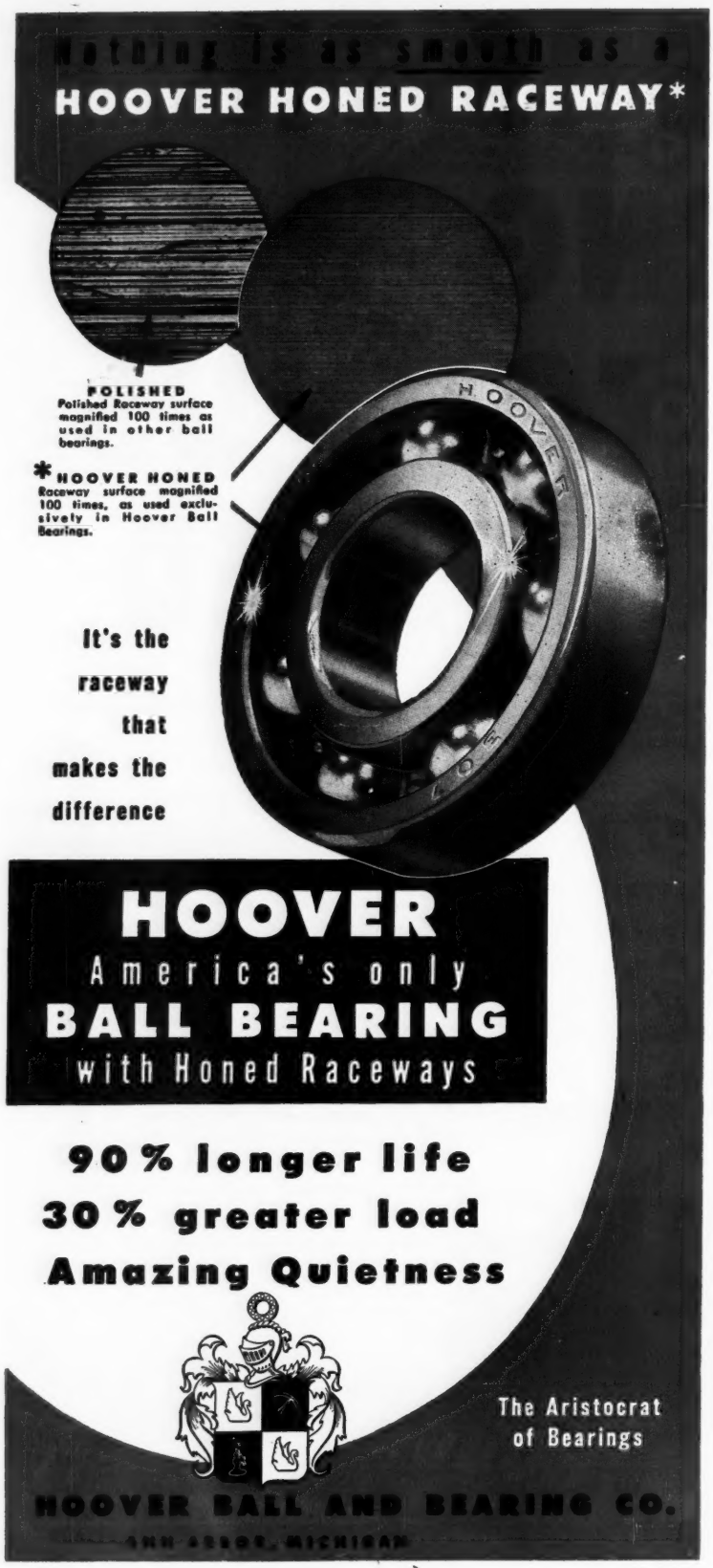
Ready to give you on-the-job service . . .


Nothing is as smooth as a
HOOVER HONED RACEWAY*
POLISHED
Polished Raceway surface magnified 100 times as used in other ball bearings.
*HOOVER HONED
Raceway surface magnified 100 times, as used exclusively in Hoover Ball Bearings.
It's the raceway that makes the difference
HOOVER
America's only
BALL BEARING
with Honed Raceways
90% longer life
30% greater load
Amazing Quietness
The Aristocrat of Bearings
HOOVER BALL AND BEARING CO.
ANN ARBOR, MICHIGAN

production and cut rejects to less than 1 per cent. The company says today 20 mm barrels can be broach-rifled in about 3 minutes; 37mm pieces take about 5 minutes. In aircraft work, universal fixtures make it possible to hold work at any angle from horizontal to 48 degrees. In this function, the fixtures helped solve a cost problem in working jet components. Designed for holding large compressor rotors at compound angles, they can replace 12 fixed angle blocks to make quantity production more practical.

The company tells its story of 50 years in the broaching field in a booklet titled, "Life Was Like That—Before Broaching." Copies are available from the Hudson, Mass., office.

What's a Silicone?

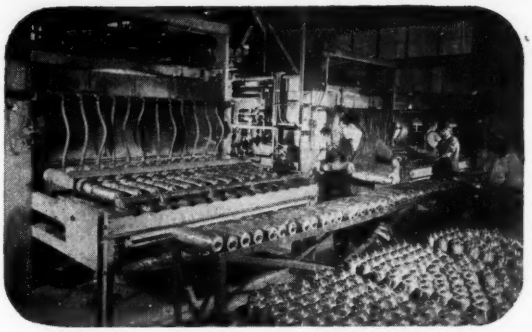
Dow Corning Corp.'s answer to the oft-voiced question, "What's a silicone?" is contained in a 33-page booklet that defines these organo-silicone-oxide-polymers according to application. The company illustrates and describes uses in electrical insulation, protective coatings, defoamers, lubricants, release agents, fluids, water repellants, polishers and Silastic. The latter is Dow Corning's silicone rubber.

Porcelain Enamel Adherence

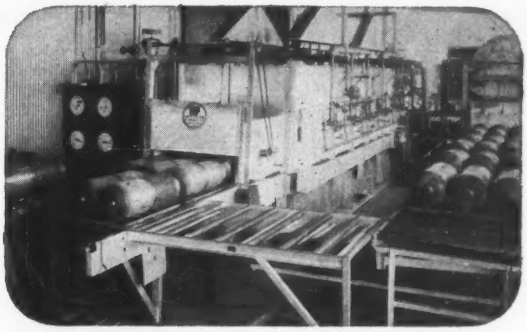
Ceramic or porcelain coating, to be effective, must adhere to the metal it is designed to protect. Cobalt oxide effectively promotes adherence of porcelain enamel to iron, so is added to enamel ground coats. However, mechanisms by which cobalt oxide promotes adherence are not well understood.

Sensitive radioisotope tracer techniques were used by National Bureau of Standards to obtain more information on this important problem. The study was part of a broad investigation—sponsored by National Advisory Committee for Aeronautics—of mechanisms involved in adherence of porcelain-enamel and ceramic coatings.

Checking distribution of radioactivity in coated specimens after firing, NBS found that a metallic cobalt layer was formed at the enamel-metal interface. Near the interface, the enamel layer was de-



Shell Forgings 75 mm, 90 mm, 105 mm and other sizes are scale-free hardened, uniformly, automatically and continuously, in these and other EF gas fired installations.



Gas Cylinders Compressed gas cylinders or tanks are continuously normalized and annealed—scale-free, inside and out—in this and other EF gas fired furnaces.

Typical EF Furnace Installations for Defense Production

We have the drawings and have already built these and many other defense production furnaces. Years of experience and complete manufacturing facilities enable us to give dependable service on furnaces for treating jet or propeller type engine parts; tank, automotive or aircraft parts; armor plate; metal powder products, ammunition components and other defense products.

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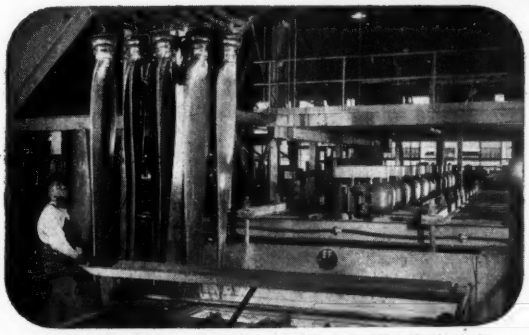
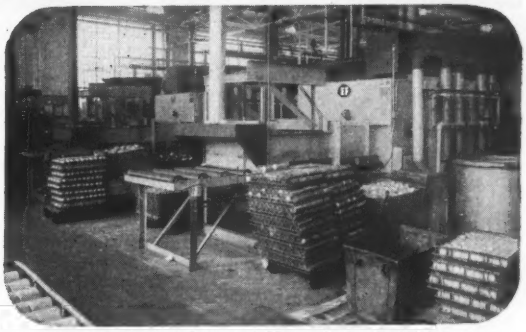
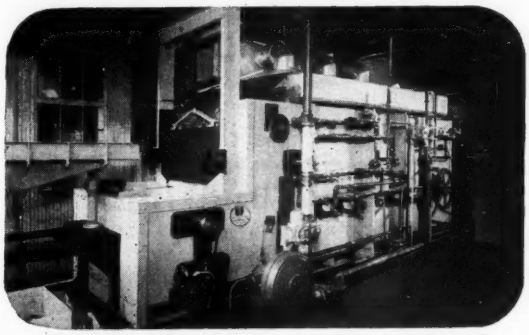
GAS, OIL OR ELECTRIC FURNACES, FOR ANY PRODUCT, PROCESS OR PRODUCTION



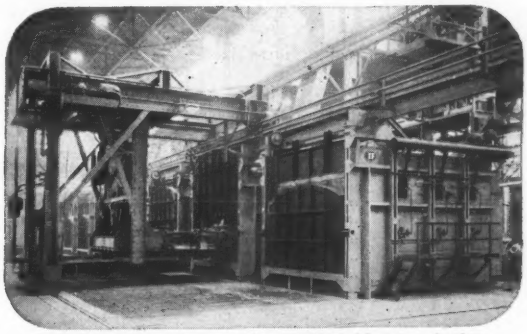
Aircraft Parts Propeller blades are uniformly heated and quenched in this EF continuous furnace. Types available for other propeller and jet type engine and aircraft parts.



Shell Cases A battery of EF gas fired radiant tube continuous special atmosphere, clean annealing and stress relieving furnaces. Other types available for steel or brass.



Cartridge Clips Machine gun cartridge clips, links and other products are scale-free hardened —continuously in EF belt furnaces. Capacities, 175 to 2000 lbs. per hr.

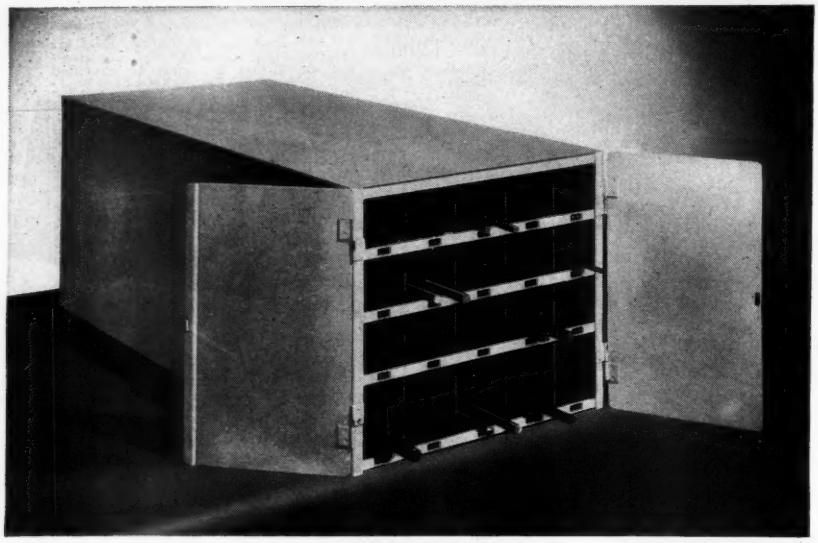


Tank Armor Heavy castings, plate, weldments and other products are heat treated in these EF furnaces. Gantry cranes simplify loading, unloading and quenching.

News! News! News!

FOR *ALL* METAL PRODUCTS MANUFACTURERS!

Here's* Sure Spec...*the finest quality drill rod money can buy...with a safe, sturdy steel cabinet to store and protect it!



Cabinet stocks 3 ft. lengths

Sure Spec drill rod is high grade tool steel — comes in manufacturers' standard sizes at low prices!

Rounds from .013" to 2"
Squares from 1/16" to 1"
Flats from 1/16" x 1/8" to 1/2" x 1"

SEE!

this easy purchase plan...

This is no ordinary storage box. The cabinet is all steel outside and has removable steel partitions to provide various bin sizes. Bin floors are wood. Doors are equipped with hasp for padlock. Bins have slots at front for rod size tickets for easy selection and stock checking. Cabinet is painted an attractive orange inside and out, with black walls and floors for the bins. Stocks rounds, flats and special shapes up to 36" long in its 20 bins. Imprinted on the inside of the doors are fractional, decimal and weight equivalents of standard Sure Spec drill rod sizes.

***This safe, sturdy steel storage cabinet*, designed to protect your drill rod, is yours with one of these easy plans:**

1. You may purchase the cabinet alone for $24.95 f.o.b. Cleveland.
2. Or you may get the cabinet free with an initial order of $150 of Sure Spec drill rod.
3. Or you may get a $24.95 credit for the cabinet if you purchase $150 worth of Sure Spec Drill rod within a 90-day period.

Send your order today for plan 1, 2 or 3.

Or Write Today for comprehensive data book detailing all the facts about Sure Spec drill rod, such as sizes, analysis, uses and treating. Also, at your request, one of our sales engineers will call to discuss your particular drill rod requirements and quote prices.

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SURE® SPEC — DEPENDABLE AS THE SUN — STEEL SERVICE

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pleted in cobalt oxide. Mount of cobalt that thus migrated to the interface increased with increased firing. Total quantity was still extremely small—equivalent to a layer of metallic cobalt of the order of 0.01 micron thick for normal firing. Cobalt deposit apparently did not penetrate into the enameling-iron base during normal firing.

Small specimens of 18-gage enameling iron were coated with a porcelain enamel to which radioactive cobalt oxide was added. After underfiring, normal firing or overfiring, the specimens were deenameled with molten sodium hydroxide. After measurement of radioactivity of the specimens, the iron oxide layer was removed by agitation in sodium citrate solution and radioactivity was again counted. These measurements indicate the amount of cobalt present at the interface in metallic form.

To study the cobalt distribution in the enamel layer itself, specimens were ground through from one side until almost all of the iron was removed. Treatment with a solution of iodine in potassium iodide removed the rest of the iron and also removed the metallic cobalt layer.

To obtain a picture of the cobalt distribution near the interface by a different technique, a normally fired specimen was mounted in plastic and ground at a slight angle to give a large-scale section through the interface and into the metal. An autoradiograph of the section was made by letting radiation from the specimen impinge directly on a photographic film that was in contact with the specimen. Like the other observations, the autoradiograph shows that the radioactive cobalt concentrated at the interface but did not penetrate the metal.

Substantial penetration of the iron base by the radioactive cobalt was observed, however, in a coated specimen that was heated in air at 1300° F for 270 hours after normal firing. When such a specimen, after the enameling, was treated with the ammonium citrate solution and rubbed with a damp cloth, the radioactivity count was reduced by only about 10 per cent. An autoradiograph likewise showed

THE SOLUTION TO YOUR MARKING PROBLEMS

MARKAL *Paintstiks*

For Marking HOT SURFACES—up to 2000° F.
Steel ingots, welding, heat treated metal.

COLD SURFACES—as low as—50° F.
Any surface, wet or dry, icy, rough or slick.

A complete line of PAINTSTIKS offers the selection of the correct marker for any given job.

The wide variety of Markal Paintstiks makes it possible to correctly mark your products knowing that the mark will be permanent or can be removed when you want it. Temperatures, hot or cold, are no problem as there is a Paintstik for all conditions. Hot castings for example can be marked and immediately immersed in cold water bath without defacing the markings. Paintstiks provide a mark that remains highly legible, adheres to the surface and will not run, char, flow, discolor, peel or crack. Specify Markal Paintstik the next time you order.

FREE SAMPLE UPON REQUEST

Here are a few of the many uses

- √ Marking hot castings
- √ Marking billets (cold)
- √ Marking cold plates for identification
- √ Marking parts to withstand range of annealing temperatures
- √ Marking steel ingots at 1600°F
- √ Marking hot metal slabs
- √ Marking guide lines for torch cutting and welding
- √ Marking metal parts
- √ Marking in color for identification and coding

For special problems, write for engineering aid.

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THE MARK OF QUALITY
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MARKAL PAINTSTIKS
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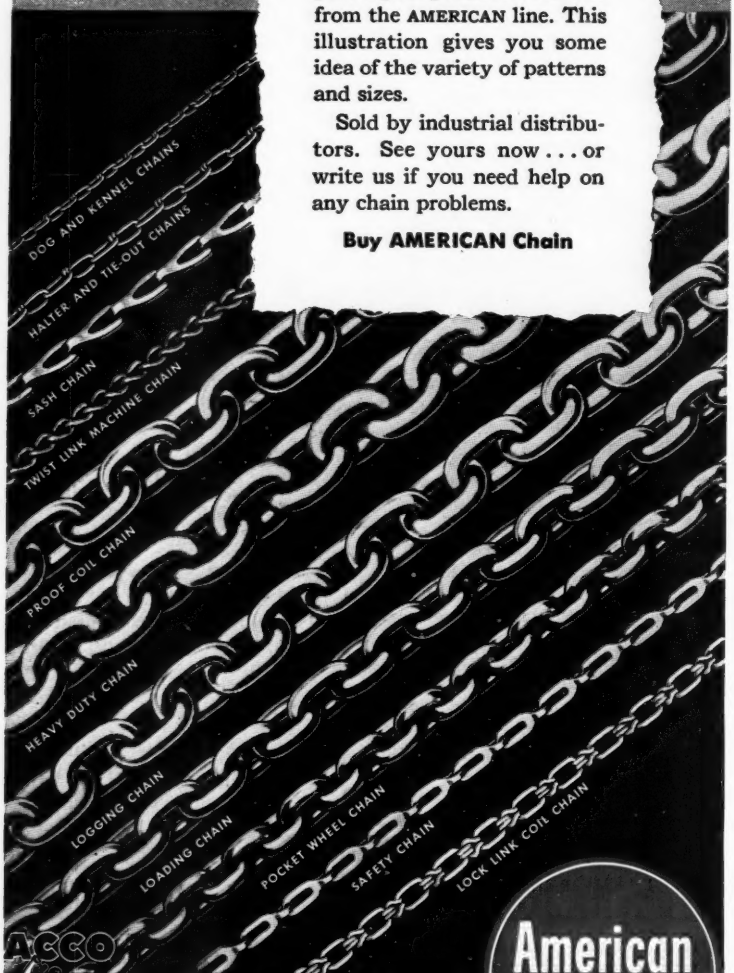
You Name It . . .
AMERICAN Makes It

● Whether you need welded or weldless chain, or attachments . . . small chain or large . . . for use in your plant or as part of your product . . . choose from the AMERICAN line. This illustration gives you some idea of the variety of patterns and sizes.

Sold by industrial distributors. See yours now . . . or write us if you need help on any chain problems.

Buy AMERICAN Chain



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TRADE MARK

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

American Chain

considerable radioactivity below the surface of the iron.

The cobalt deposit is believed to be metallic because it is removed with the iron base metal during the iodine potassium iodide treatment, but is not completely removed by 65 hours of treatment with ammonium citrate.

Foundrymen View Advances

(*Continued from Page* 100)

dence that the foundry industry is making a determined effort to correct both working conditions and air pollution. Three sessions, incorporating 7 papers were held on the subject. The AFS itself is undertaking a $350,000 program to determine the best method for correcting the smoke and dust problem.

Shell Molding — The foundry equipment and supply exhibits, in which about 260 companies were represented, reflected the recent emphasis toward more automatic operation of machinery and a reduction in manual handling. Widespread interest in the shell molding process was indicated by the attention given to those exhibits which displayed either the rosin materials used in the process or the machinery developed for making shell molds. An overflow audience — approximately 700—attended the symposium on shell molding presided over by R. H. Jacoby, Key Co., East St. Louis, Ill., and B. N. Ames, New York Naval Shipyard, Brooklyn.

General impression left by the speakers was that the shell molding process has great possibilities for certain applications, but certainly is not a cure-all and is not adapted to the production of all types of castings. It was also emphasized that shell molding actually is not cheaper than ordinary sand molding but the cost of the end product may be cheaper if, by using shell molding, sufficient machinery operations are eliminated, or the number of scrap castings produced is sufficiently less compared with previous practice.

Savings Possible — It was evident that one of the important opportunities for application of the process is to replace other forms of fabrication, rather than replacing existing types of sand molding.

To Serve Industry's Needs

ANOTHER B&A PACKAGING "FIRST"!

Now-PLASTIC CARBOYS

for B&A Reagent Hydroflouric Acid*

in Commercial Quantities

AGAIN, BAKER & ADAMSON INAUGURATES another major advancement in packaging high-purity chemicals in plastics.

Now it offers B&A Reagent Hydrofluoric Acid to bulk users in the first plastic carboys ever made!

Here is a unique, completely different package ideally suited to reagent HF and other liquid fluorine chemicals for which no previous container has been wholly satisfactory.

Review the many advantages outlined. Consider what they can mean to you. Then order your reagent HF needs from B&A without delay.

Important Advantages to Benefit You!

Purity Protected—Product quality is safeguarded by inert polyethylene bottles.

Strong—Sturdy—reduce handling and storage hazards. Bottles are molded of tough, resilient, shatter-proof polyethylene; enclosed in weather-resistant plywood jackets.

Two Sizes—6½ and 13 gallons.

Economical—save on freight. 13-gallon carboy has only 26 pound tare weight. 6½-gallon carboy—17 pounds tare.

Compact—store more acid in less space. 13-gallon cylindrical carboy is only 15 inches in diameter, stands 34" high. 6½-gallon carboy, proportionately smaller.

Easier to Handle—Convenient size and light weight insure ease of lifting and pouring.

Easier to Open and Pour—Screw-type plastic cap *plus* special pour-clean bottle lip makes opening, pouring, and reclosure easy; safeguards against spillage...leakage.

*Other B&A Fine Chemicals soon available in plastic carboys include Fluoboric Acid; Metal Fluoborate Solutions.

REAGENTS B&A STANDARD OF PURITY FINE CHEMICALS

TWO OTHER B&A FIRSTS IN PACKAGING WITH PLASTICS

—The famous B&A Laboratory Saftepak, with special pour-out for dispensing reagent HF. Replaced wax bottles.

—Plastic jug with screw-cap closure for reagent and technical HF in semi-commercial quantities. Replaced lead jugs.

BAKER & ADAMSON *Fine Chemicals*

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ALLIED CHEMICAL & DYE CORPORATION

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SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

for a tighter hold

Torrington Swaging Machines offer an ideal method of attaching ferrules and cable ends to wire or rod. Rapid hammer blows (4000 a minute) tighten the ferrule quickly around the rod – producing a bond that withstands as much tensile strain as the inner member alone.

"The Torrington Swaging Machine" tells you how to do a better job of shaping many metal parts, and save money, too. It also describes the complete line of Torrington machines. Write for your free copy...today!

THE TORRINGTON COMPANY
Swager Department
556 Field Street • Torrington, Conn.
Makers of
TORRINGTON NEEDLE BEARINGS

While various advantages are cited for shell molding, the consensus appears to be that the saving in machining and the dimensional accuracy obtained are the principal ones.

I. R. Wagner, Electric Steel Casting Co., Indianapolis, was elected president to succeed Walter L. Seelbach, president, Superior Foundry Inc., Cleveland, at the annual business meeting of the American Foundrymen's Society May 3. Collins L. Carter, president, Albion Malleable Iron Co., Albion, Mich., was elected vice president. L. N. Shannon, vice president of Stockham Valves & Fittings Inc., Birmingham, Ala., was elected president of the International Committee of Foundry Technical Associations. He was vice president during the past year. The international committee is the overall international group of the whole foundry organization.

New Directors—Five new directors were elected for 3-year terms. They are: Martin A. Fladoes, Sivyer Steel Castings Co., Milwaukee; Walter J. Klayer, Aluminum Industries Inc., Cincinnati; J. O. Klein, Texas Foundries Inc., Lufkin, Tex.; A. D. Matheson, French & Hecht Division, Kelsey-Hayes Wheel Co., Davenport, Iowa; H. G. Robertson, American Steel Foundries, Alliance, O.

The Charles Edgar Hoyt Annual Lecture, which followed the business meeting was given by John S. Bugas, vice president-industrial relations, Ford Motor Co., Dearborn, Mich., on "Frontiers in Industrial Relations." In his lecture he discussed the part that industry is playing and should play in providing opportunities to the individual to help further the American way of life and offset the encroachment of isms.

In the president's annual address to the 10,000 members of AFS, Mr. Seelbach praised the work of 600 men who served on technical committees of the society. He also emphasized the importance of the various research projects which are under way, involving fundamental practices of importance to different branches of the foundry industry.

Five Medalists—The annual banquet Saturday evening, May 3, was the occasion for the awarding of

"Joe, where can we get these small parts in the quantity we need?"

"From Torrington, Tom! They turn out hundreds of thousands of precision metal parts a day."

Batteries of automatic and semi-automatic machines are working steadily and efficiently at Torrington, keeping many of the nation's leading manufacturers supplied with small precision metal parts made to their specifications. Whether you need a tremendous quantity of parts on a regular basis, or only an occasional few, we can furnish them at a surprisingly low cost.

Just send us a sample or blueprint of your small metal components. Tell us how many you need. We'll give you a prompt quotation.

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Specialty Department
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Makers of
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today's best buy is better air!

Electro-MATIC super-clean air

PAYS A PROFIT!

THIS appears to be a modern steel mill installation of AAF Electro-Matic filters supplying *super-clean* air to a motor room. Actually it is an installation in Kaufmann's Department Store, Pittsburgh, which goes to prove that *super-clean* air is a profitable investment in many types of business.

Developed exclusively by AAF engineers, the Electro-Matic is the only automatic, self-cleaning, electronic precipitator. It is widely used not only in steel mills, but in textile, pharmaceutical, chemical and other industries, as well as commercially. The Electro-Matic maintains high efficiency filtration of fractional micron particles—such as smoke and fumes—in addition to coarse material. The filters are standardized, self-contained units easily installed in various arrangements to meet any air volume requirement.

Exclusive features of the Electro-Matic are its automatic operation and self-cleaning function. This combination reduces servicing to routine maintenance and insures maximum operating efficiency at all times. The installation above . . . like so many in the steel industry . . . is equipped with oil clarifiers which continuously clean the Viscosine and simplify sludge removal.

AAF makes the *only* complete line of air filters and electronic precipitators. If you have a problem requiring *super-clean* air see your nearby AAF representative or write today for our Electro-Matic Engineering Bulletin No. 250-E.

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Now Standard Grade 65% FERRO-SILICON

{ 65 to 70% Si .70 to 1.50% Al }

We are pleased to announce the successful development of a standard grade 65% Ferro-Silicon.

Thermodynamically balanced silicon additions of this intermediate alloy are neither exothermic nor endothermic. Patented metal casting process insures excellent physical stability . . . will not disintegrate.

Reasonable in price, 65% Ferro-Silicon is ideally suited for both furnace and ladle additions of silicon in the production of alloy steels. For complete information, write or phone us today.

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FERRO-SILICON 50 - 65 - 75 - 85 - 90%
SPECIAL BLOCKING 50% FERRO-SILICON
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SAN FRANCISCO AREA—Pacific Graphite Company, Inc., Oakland 8, California.
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DENVER, COLORADO—Metal Goods Corporation.
CANADA—Overseas Commodities, Ltd., Vancouver, B. C.
MEXICO—CIA. Proveedora de Industrias, S. A. Mexico, 6, D. F., Mexico.

SALES AGENTS, NO WAREHOUSES:

NORTHWEST AREA—E. A. Wilcox Company, Arctic Building, Seattle 4, Washington; Phone Mutual 1468.

BIRMINGHAM DISTRICT—Schuler Equipment Company, First National Building, Birmingham, Alabama.

gold medals and honorary life memberships in AFS. Albert Portevin, distinguished French physical metallurgist won the Joseph S. Seaman medal. The John A. Penton medal went to Frank G. Steinebach, editor of *Foundry;* Henton Morrogh, research manager, British Cast Iron Research Association, was awarded the William H. McFadden medal. Two men, Albert P. Gagnebin, Development and Research Division, International Nickel Co. Inc., and Keith D. Millis, Development and Research Division International Nickel Co., were awarded Peter L. Simpson medals.

At the annual meeting, two life memberships in the Institute of British Foundrymen were conferred on Dr. James T. MacKenzie, technical director of American Cast Iron Pipe Co., and Oliver Smalley of Meehanite Metal Corp. The membership certificates were presented by Noel P. Newman, past president of the Institute of British Foundrymen and affiliated with Newman-Hender Co., Gloucester, England.

Next year the annual meeting of the American Foundrymen's Society will be held in Chicago, May 4-8. The next Congress is scheduled to be held in Paris, France.

Photography in Engineering

Five days of research papers, demonstrations and discussions will cover science, techniques and applications when the Photographic Society of America meets in New York Aug. 12-16. A symposium on photography in engineering includes "Photography of High-Speed Cathode-Ray Oscilloscope Traces" and "Industrial Photography as a Tool for Engineers." Speaker for the first topic is Harold J. Peake, Naval Research Laboratory; for the second, G. H. Gustat, Eastman Kodak Co.

Distributor Expands Tube Line

Peter A. Frasse & Co. Inc., will distribute ACIPCO centrifugal cast tubing manufactured by Special Products Division, American Cast Iron Pipe Co. By adding this product to its line, Frasse can now supply tubes in sizes up to 50 inches OD.

Engineering memorandum published by the company covers in de-

"HORSE AND BUGGY"

fire protection is not enough today!

The modern industrial plant is a marvel of technological development. Automatic machines manufacture all kinds of products with unbelievable speed and precision.

But the more highly developed the production process, the greater the value of equipment. And the higher the production rate, the more vital the need for continuous, uninterrupted operation.

That's why old-style, make shift fire protection methods should have no place in industry today!

Automatic Sprinkler 10-Point Fire Protection is as modern as your newest production machine. It's scientifically engineered to prevent fire damage to your most costly processing equipment. It employs the most positive, fastest-acting fire detection devices, and the most effective extinguishing methods. It counters every fire hazard in your plant which, unheeded, might lead to disastrous shut-downs.

The whole story is told in straight-forward terms in our new book "The ABC of Fire Protection". Write for your copy today.

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FIRST IN FIRE PROTECTION

Smart

Standard Steel Works
Forged Pinion Blank

Machined Pinion, ready for installation.

Reduction Gear—Standard Steel Pinion Blanks have the necessary uniformity and high physical properties for applications like this.

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BALDWIN

operators cut their teeth on

STANDARD STEEL WORKS

forged pinion blanks

The high cost of machining a stub axle pinion like this makes it imperative to *start* with a blank that is free from flaws and completely uniform in structure.

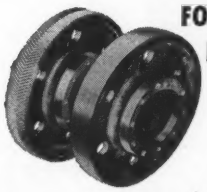
That's why these Standard Steel Works blanks are made with such particular care. They start with steel produced in Standard's own open hearth furnaces, where the most rigid control of analysis can be consistently maintained. Forging, on one of the battery of presses or hammers, develops superior physical properties, and refines the grain structure. Heat treating in special furnaces relieves strains, and adds an important plus to service qualities. Close dimensional tolerances reduce machining time and waste.

It is always well to remember that a gear can't be any better than the blank . . . and that getting a better blank is the surest way to assure minimum machining and maximum service. You'll find Standard an ideal supplier: big enough to handle the most particular jobs, small enough to make every job a matter of personal concern.

ALSO . . .

FORGED WELDLESS RINGS FOR RING GEARS

Uniform structure permits precision machining, assures uniform strength. No welded areas to affect tooth physical properties or finish.



FORGED BLANKS FOR GEARS

Pressed die forgings for gear blanks provide the strength, toughness needed in heavy duty service. Conformity to design tolerances saves machining.

NOTICE: DESIGN AND PURCHASING DEPARTMENTS—Standard is equipped to supply pinion blanks in any size that can be worked under a hammer . . . weldless rings up to 12 feet diameter . . . and pressed die forgings up to 50 inches diameter. Make a note to let us quote on your requirements.

STANDARDIZE ON STANDARD for

GEAR BLANKS, STEEL CASTINGS, FORGINGS,

WELDLESS RINGS, FLANGES

STANDARD STEEL WORKS DIVISION

Burnham, Mifflin County, Pennsylvania

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WHY NOT cast a magnesium mousetrap?

Maybe it IS a lousy idea . . .

On the other hand, maybe it's as practical as using cheese for bait.

Frankly, we haven't gotten out a slide rule or put our thinking cap on tight, to figure it out one way or the other. Maybe the mice wouldn't go for it.

But we do know a lot of things WILL be cast in magnesium or aluminum after military requirements are satisfied.

A lot of things no one ever thought would be.

So whatever your plans are; whatever directions they might take; whatever products you might have on scraps of paper, in preliminary drawings, or just plain ideas-on-the-brain . . . . keep an open mind in terms of magnesium or aluminum in sand-cast, semi-permanent or permanent mold form.

Particularly Well-Cast castings.

Naturally.

Well-Made Wood and Metal Patterns • Ampco Bronze Castings

Almost a half-century of Experience

THE WELLMAN BRONZE & ALUMINUM CO.

DEPT. 19 • 12800 SHAKER BLVD., • CLEVELAND 20, OHIO

tail the characteristics, properties, analyses, applications and pertinent facts of the centrifugal cast tubing addition. Made in sizes ranging from 2 to 50 inches OD, with wall thicknesses from ¼-inch to 4 inches, these tubes can be ordered in lengths to 16 feet long. Complete information, given in engineering memorandum No. 11, can be obtained by writing the company, 17 Grand St., New York 13.

Mechanized Foundry Ups Output

How a foundry can be mechanized for increased production, better castings and improved working conditions is the topic of a booklet, published by Link-Belt Co.

Included is a selection of actual case histories, foundry layout drawings and installation photographs. Contrasts are made between original methods and modern mechanical handling in molding, pouring, cooling and sand preparation through use of sand reconditioning machinery, shakeouts, and conveyors for molds, sand and castings.

A copy of foundry mechanization book No. 2439 will be sent on request to the company, 307 N. Michigan Ave., Chicago 1.

Automatic Setting Detailed

Manual detailing care and operation of automatic rivet-setting and spot-setting equipment is offered by Milford Rivet & Machine Co. Material that covers operation and adjustment of the company's Horton nonrepeat clutch is also included. Copies of manual 352 can be obtained by writing the firm's Machine & Parts Department, Milford, Conn.

New Uses for Porcelain Enamel

Porcelain Enamel Institute's booklet, "101 New Uses for Porcelain Enamel," is available to all interested manufacturers and individuals. Previously, the publication was restricted to institute members.

The comprehensive project lists 101 new commercially feasible applications for porcelain enamel. It discusses specific advantages for each particular application, including sufficient marketing data to

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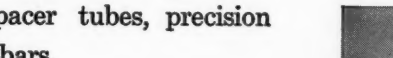
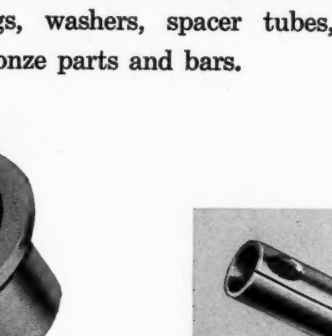
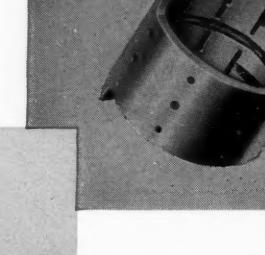
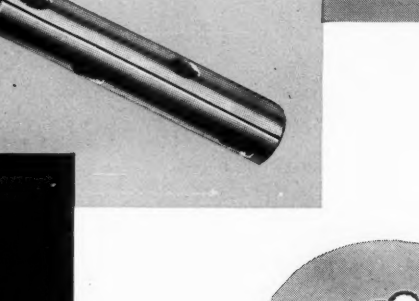
FEDERAL Mogul

Six plants producing sleeve bearings in all designs and sizes; cast bronze bushings, rolled split-type bushings, washers, spacer tubes, precision bronze parts and bars.









Since 1899

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FEDERAL-MOGUL CORPORATION, 11051 SHOEMAKER, DETROIT 13, MICHIGAN

give a potential manufacturer an idea of possibilities for success in locating and satisfying existing markets.

Copies can be obtained for $6 by writing the institute, 1010 Vermont Ave. NW, Washington 5.

Blast Cleaning Is Continuous

"Continuous Airless Blast Cleaning" is summarized in a bulletin published by American Wheelabrator & Equipment Corp., 1157 S. Byrkit St., Mishawaka, Ind. Of particular interest to shops with problems of cleaning relatively large tonnages on a production basis, the publication explains process of continuous blasting and illustrates its application.

Work progresses in uninterrupted flow through the machine. There is no starting, stopping, loading and unloading. As a result, the method lends itself to line production, and since there is only one machine involved, there is a reduction in manpower and floor space. Materials handling is simplified and there is a lower power connected load. Copies are available on request for bulletin 844.

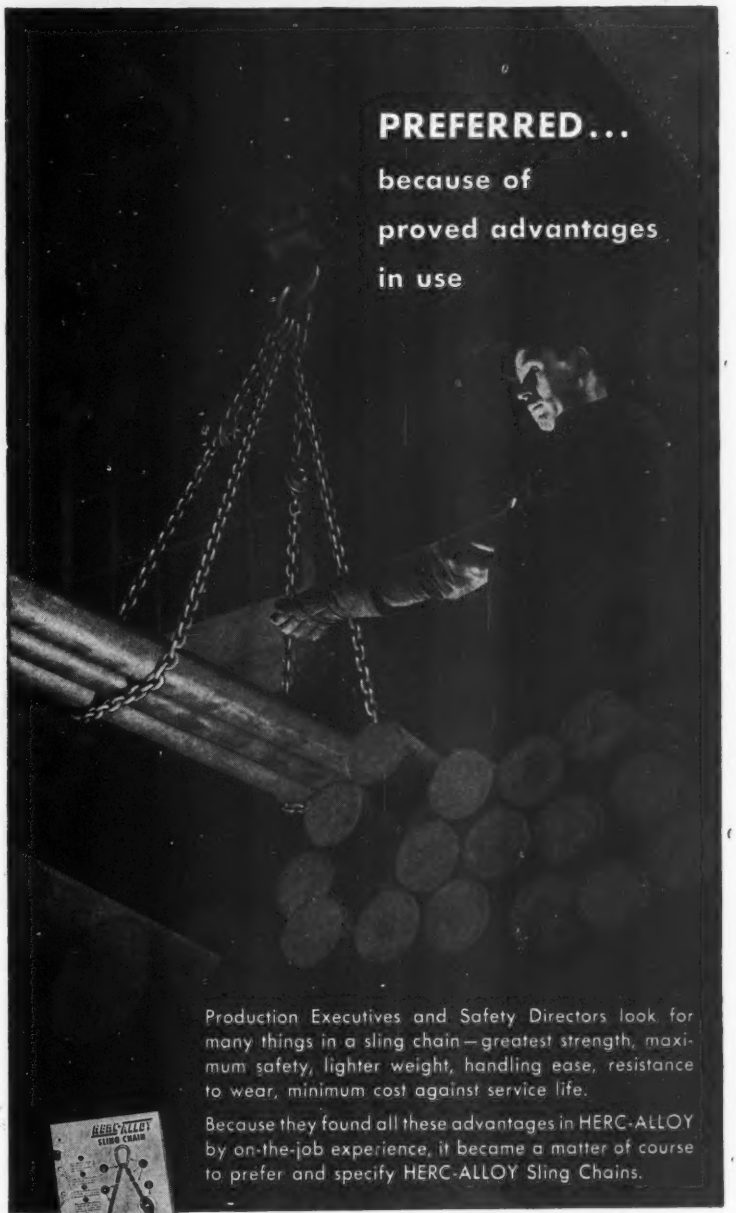
Tool Broaches Tapered Splines

Use of the broaching process in production of accurate tapered splines on several different sizes of parts is possible with a machine developed by Colonial Broach Co., Harper Station, Detroit. Machine basically is a Colonial 15-ton, 66-inch stroke pull-down model with special table and adjustable short shuttle travel.

Model is designed to produce several sizes of angular straight-sided splines in tractor sprocket wheels, etc., of varying outside diameters. Tractor wheel is placed over the broach tower on a fixture plate with broach in down position. Angle of plate is made so that broach, which travels vertically, will produce splines with correct amount of taper. Parts are held in position with hold-down studs and a strap clamp.

When part is clamped in position, start button is pressed and machine begins its automatic operating cycle. Operation is hydraulic throughout, with electric controls. A hinged arm on the column is swung into position by a

HERC-ALLOY
SLING CHAINS

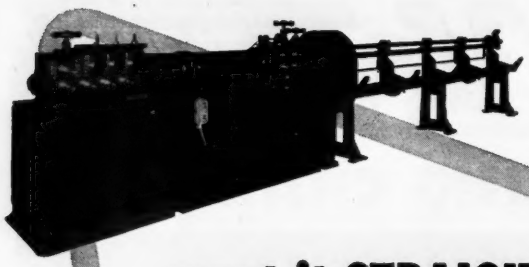


Production Executives and Safety Directors look for many things in a sling chain—greatest strength, maximum safety, lighter weight, handling ease, resistance to wear, minimum cost against service life.

Because they found all these advantages in HERC-ALLOY by on-the-job experience, it became a matter of course to prefer and specify HERC-ALLOY Sling Chains.

Write for illustrated Data Book No. 3 which contains helpful information on sling chain selection and use.

COLUMBUS McKINNON CHAIN CORPORATION
(Affiliated with Chisholm-Moore Hoist Corp.)
GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.
District Offices: New York • Chicago • Cleveland
Other Factories at Angola, N. Y., Dixon, Ill., St. Catharines, Ont., Can., and Johannesburg, South Africa.



Type 4A
Capacity 3/8" to 11/16" round wire.

want it STRAIGHT?

You'll get it straight from this Shuster. It straightens and cuts wire of all industrial alloys, no matter how badly twisted the coil. It delivers accurate, precision-cut lengths quickly — economically — and for long, trouble-free production runs. SHUSTER wire straighteners and cut off machines are available in sizes to handle wire from .025" to 11/16" diameter.

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"New Process"
Punches • Dies • Rivet Sets
Compression Riveter Dies
Made to highest standards and uniform quality thus insuring maximum service—
Since 1903
Large inventory of stock sizes of round punches and dies also rivet sets available for immediate shipment. Square, rectangular, oblong and elliptical shapes made to order.
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manually controlled hydraulic cylinder after the part is loaded into place. This arm backs up the broach guide during the cut and avoids deflection.

Cutting time for the broaching operation is kept to a minimum, and rigidity of fixture mounting assured by the small amount of shuttle movement. On the tractor wheel, maximum shuttle movement is ⅜-inch. Some sizes of splines in the hubs permit shuttle movement to be adjusted to 3/16-inch.

Largest part broached on the machine has a 42-inch OD. Concentricity of splines with outside diameter of the parts is achieved by fitting this outside diameter into a ground hole in the fixture plate. Fixture plates are interchanged to suit the various parts.

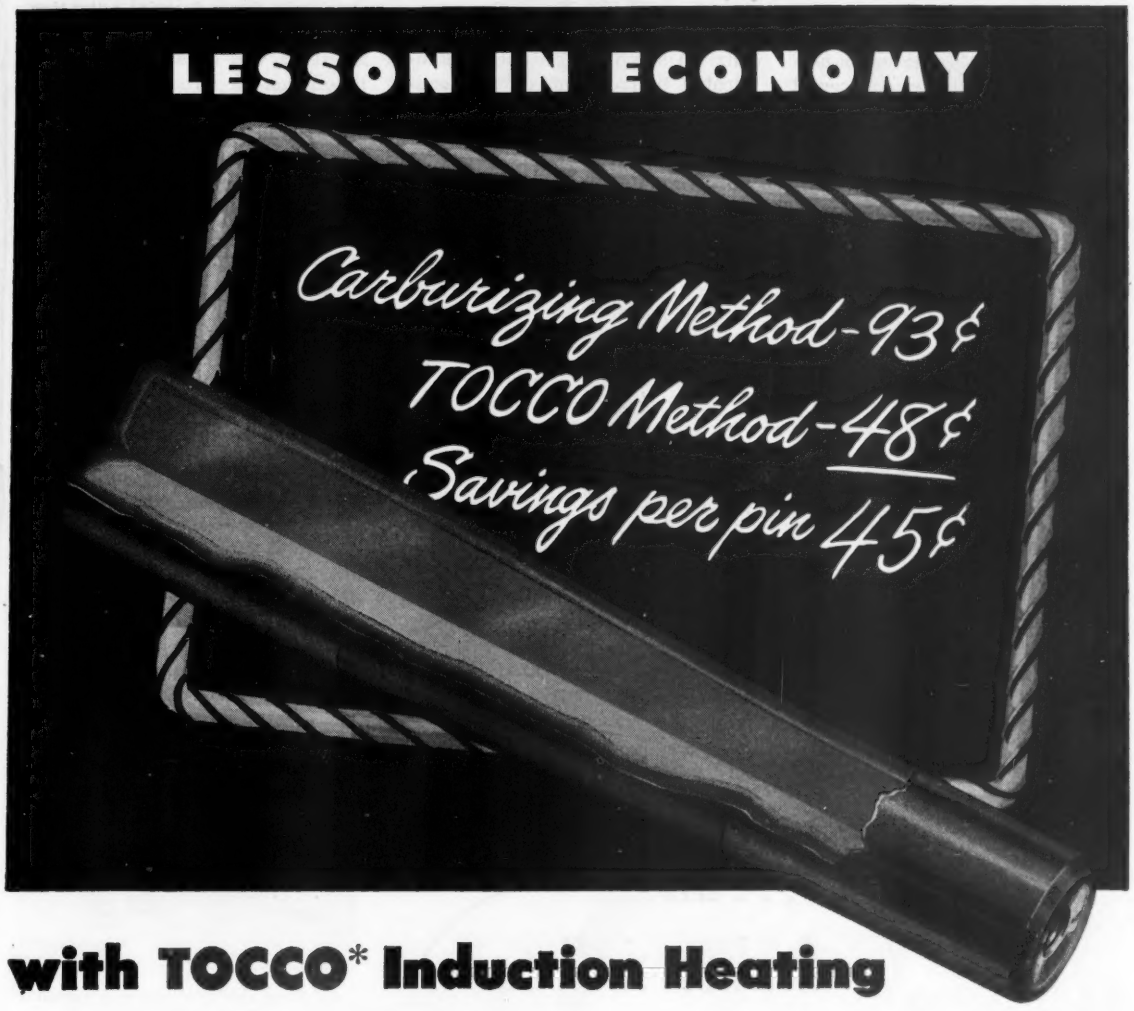
Shell Mold Resins Reported

Four new plastic products for the foundry industry and expansion of research and production facilities to meet the industry's demand for phenolic resins are announced by Monsanto Chemical Co. Developments were reported by E. L. Hobson, assistant general sales manager of the firm's Plastics Division at the American Foundry Congress and Exposition.

Mr. Hobson estimates Monsanto's production of resins for the foundry industry's shell mold process will increase 100 per cent this year. A substantial portion of production at its new Port Plastics plant near Cincinnati is allocated to resins for the shell mold process. This unit is scheduled for production in fourth quarter 1952. The process substitutes a thin shell of sand and resin for the vast quantities of sand used in older methods.

E. S. Bauer, industrial products manager, describes the two new phenolic resins as fast curing, fast coating compounds designed to fill a void in the line of materials for shell molding applications. They were developed to obtain faster cycles in casting operations and have been thoroughly tested and evaluated in foundry trials.

New urea core binder, Resimene 970, combines improved baking rates with high bonding efficiency and freedom from odors hitherto associated with urea bind-



with TOCCO* Induction Heating

● When a leading motor truck manufacturer switched to TOCCO for surface hardening steering knuckle pins, they not only cut the cost of the part in half, but reduced heat-treating time from 17 hours to 48 seconds!

● Using TOCCO they were able to combine two operations and eliminate four others completely. Moreover, the TOCCO unit, being located right in the production line next to related operations, saves approximately 4000′ of hauling to and from the heat-treat department – an important economy factor not included in the above figures.

● If your operations involve the hardening, brazing, soldering, melting or forging of ferrous or nonferrous metals, TOCCO can probably speed up *your* production and lower *your* costs, too. Why not ask to have a TOCCO engineer survey your plant for similar cost-cutting results—without obligation.

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ers. It is a free-flowing dry powder, essentially free from ash and skin irritants. No catalyst is necessary and little increase in cereal is required to hold the same level of green strength. Resimene 970 also makes it possible to bake cores at a higher rate.

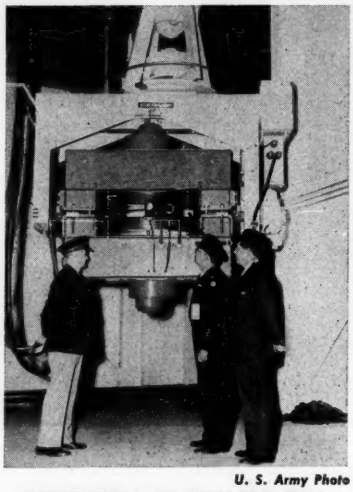
Fourth product, Dust Suppressant A, was developed to reduce dust problems in connection with the shell mold process. Classified as a nontoxic, mobile fluid of medium viscosity, the dust suppressant is reported to be effective without changing significant characteristics of the shell mold resin-sand mix. A secondary advantage is indicated in reduction of the tendency of resin to segregate in the mix.

Betatrons Probe Tank Castings

One of the fastest and most flawless castings inspection systems yet devised gives Army tank armor a thorough going-over at three eastern and midwestern foundries. These high-powered inspectors are 24-million-v betatrons, the first ever built for industrial operation. They tell at a glance where interior flaws will develop in quantity production—a process that took many hours, or even days, by former techniques.

The betatron penetrates 7 to 9 inches of armor in about a minute, detecting the most trivial flaws by the relatively rapid x-ray method. It derives its name from production of high energy beta rays or electrons, minute particles with a negative electric charge that whirl around the core of an atom.

Three Units Operating—Army Ordnance has received three units, built under supervision of the Corps of Engineers. They are operated for the Army at plants of General Steel Castings Corp. in Granite City, Ill., and Eddystone, Pa., and of Continental Foundry & Machine Co. in E. Chicago, Ill. Continental is installing another machine at its Coraopolis, Pa., plant.



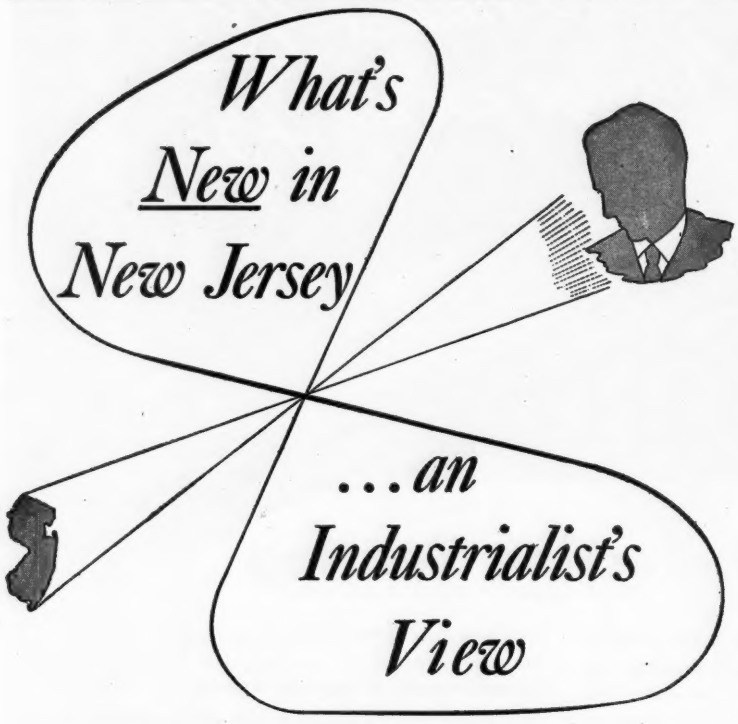
U. S. Army Photo

INSPECTION AT GRANITE CITY

. . . three installations are complete

Steel Founders Society of America calls the betatrons the largest inspection instruments ever adapted to foundry practice. In both operations manned by General Steel Castings Corp., suspension of the machine requires a 7½-ton crane that provides for lateral and transverse movement.

Proper Positioning—Tank parts up to 24 inches thick can be x-rayed. Parts enter the exposure room on a flat-bed railroad car, from which they are lifted by a 25-ton overhead traveling crane



From the viewpoint of many persons interested in manufacturing, there are many *new* developments taking place on the industrial front in New Jersey today.

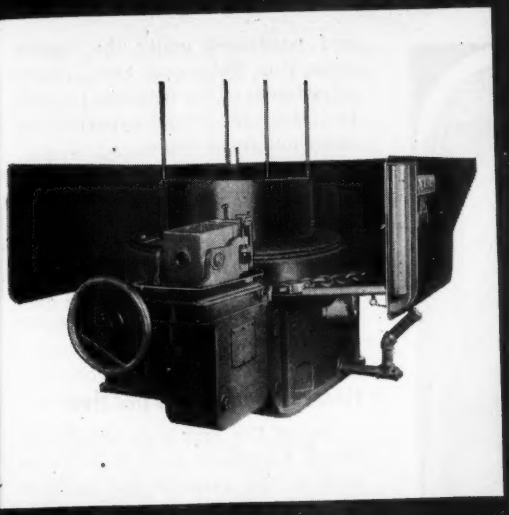
Of particular interest is a *new* booklet about New Jersey. Entitled "An Industrialist's View of the Crossroads of the East", this brochure presents the *new* facts, the *new* figures and the *new* developments taking place now in industrial New Jersey.

There's a lot of *news* at the Crossroads—*new* research plants, *new* steel mills, *new* highways, *new* markets, *new* opportunities for plant sites. If you want to know what's *new* in New Jersey, write today for your copy of "An Industrialist's View of the Crossroads of the East".

• •

Write Box F, Public Service Electric and Gas Company, 76 Park Place, Newark, N. J. for the new brochure, "An Industrialist's View of the Crossroads of the East".

PUBLIC SERVICE



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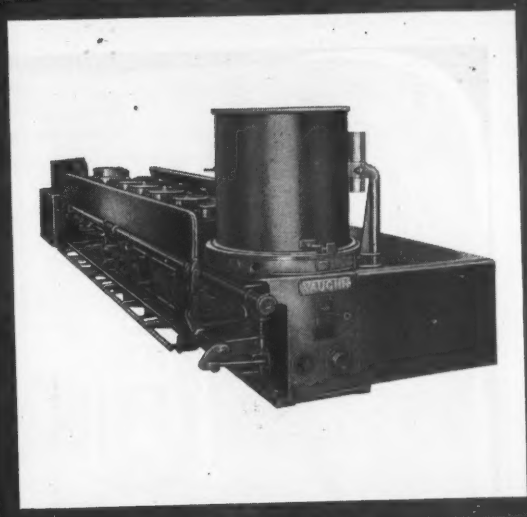

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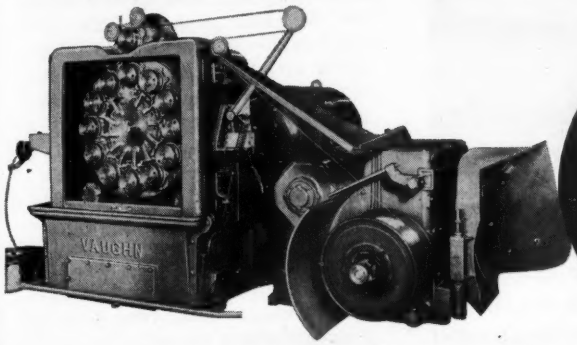
in greater cold-drawn production



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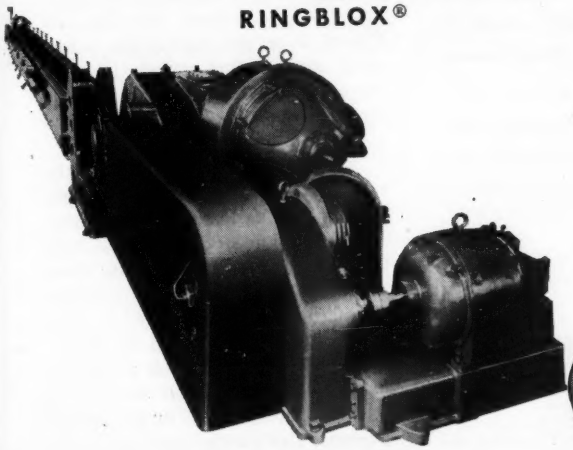

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cold drawing equipment

"Quick on the Draw"

The good name VAUGHN on cold drawing equipment for wire, bars, tubes and shapes means *more* of everything you want and need—greater productivity, increased versatility, higher stamina and longer life—in sum, *more production* for your investment dollar. Low operating costs are a VAUGHN factor, too—let us figure them with you!

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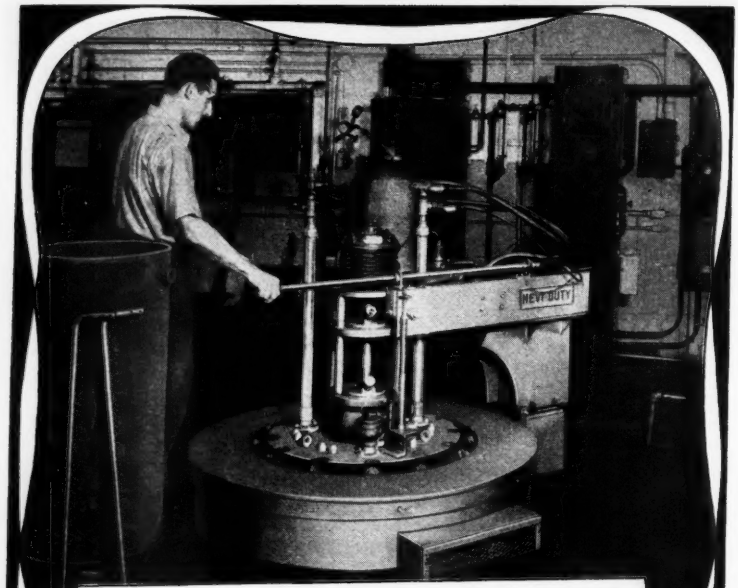
COMPLETE COLD DRAWING EQUIPMENT . . . Continuous or Single Hole . . . for the Largest Bars and Tubes . . . for the Smallest Wire . . . Ferrous, Non-Ferrous Materials or their Alloys.



"CLEAN and STRAIGHT.. ...that is the way Snap-on Tools come out of HEVI DUTY FURNACES"

says Verle Ericksen, Superintendent of Metallurgy.

Snap-on HEAVY DUTY RATCHET

...with detachable handle. The choice of better mechanics everywhere for the hardest kind of nut-turning.

Snap-on Tools Corp. uses a Hevi Duty Vertical Retort Furnace for dry cyaniding and carburizing. Results indicate that even the long-handled tools come out of the heat in such excellent condition that there is no need of straightening or cleaning.

Hevi Duty Vertical Retort Furnaces not only solve today's increased production demands but are exceptionally versatile to meet tomorrow's needs. For complete details . . .

Write for Bulletin HD-646

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HEAT TREATING FURNACES HEVI DUTY ELECTRIC EXCLUSIVELY

DRY TYPE TRANSFORMERS — CONSTANT CURRENT REGULATORS

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and positioned under the testing apparatus. Telescopic arm permits adjustment of the betatron to within ⅛-inch for proper exposure distance and focus angle.

Windowless buildings built with double concrete slab walls spaced 10 feet apart and filled with sand up to 20 feet protect against radiation. Instrument operates entirely by remote control and film is developed by a completely automatic process.

Hoist Lifts 800 Tons per Hour

One of the first high-speed, balanced, automatic mine hoists ever used in the nation's coal fields is operating at Farmersville, Ill., in the new Crown mine of Freeman Coal Mining Corp. The 1000-hp, dc hoist, driven and controlled by General Electric Co. apparatus, is designed to lift 800 tons of coal up a 491-foot vertical shaft every hour. This is equivalent to delivering 8 tons of coal to the surface every 36 seconds. It has a rated rope speed of 1357 fpm.

Constructed by the Vulcan Iron Works, Wilkes Barre, Pa., the hoist uses two skips, each weighing about 7½ tons and having an 8-ton pay load capacity. The GE amplidyne - controlled, adjustable - speed drive consists of a 1000-hp, 500-rpm, direct current drive motor and a 750-kw MG set using a 4160-v synchronous motor with a 500-v, direct current generator.

Track-Road Unit Positions Cars

Coal cars are positioned for rapid loading and loaded cars moved easily with two Whiting Trackmobiles at Peabody Coal Co.'s new Mine 10 near Pawnee, Ill. Placed in service during the mine's early construction period, the units have been in daily use, handling as much as 1700 tons per day on a double shift basis.

In its primary function, the track-road machine spots empty cars on tracks leading to the loading zone. Three cars are usually moved to the hopper at one time, then each car is eased forward gradually until filled. After two cars are full, the third is uncoupled and left positioned while the loaded cars are pulled out of the yards. During this final moving process, the power unit is uncou-

pled and switched from front to rear of the cars on its road wheels, recoupled and used as a pusher over the remaining distance. From there it can return quickly to the third car in the loading zone.

The Trackmobile is made by Whiting Corp., Harvey, Ill. It weighs 6000 pounds, deriving its power from hydraulic jacking after coupling to the railroad car. Couplers are raised sufficiently to enable the unit to borrow tractive weight from the car it pushes or pulls. Maximum draw-bar pull is rated at 7350 pounds.

Hydraulic jacking power also acts to retract or set down the road wheels in shifting from road to track operation. Changeover from road to track, or the opposite, takes about 30 seconds. Unit is gasoline powered. Its controls are similar to those on a truck or tractor except for the hydraulic action and application of four gear speeds in either direction.

Tubes Capped for Shipping

Vulnerable ends of special grade tubing are protected from scuffing, scratching or denting in transit by Superior Tube Co., Norristown, Pa. Vinyl plastic caps cover the ends and also preserve absolutely clean inside tube surface.

After soaking 1 to 4 hours in special dilator solution, the caps are soft enough to be stretched slightly and slipped over either end of the tube. Dilator soon evaporates and cap shrinks tightly to tube, completely sealing open end.

Protection is desirable on tubes used for such purposes as bourdon, hydraulic, aircraft fuel line and others produced with smooth contours and clean inside surfaces. Caps are easily peeled off when tubes are used.

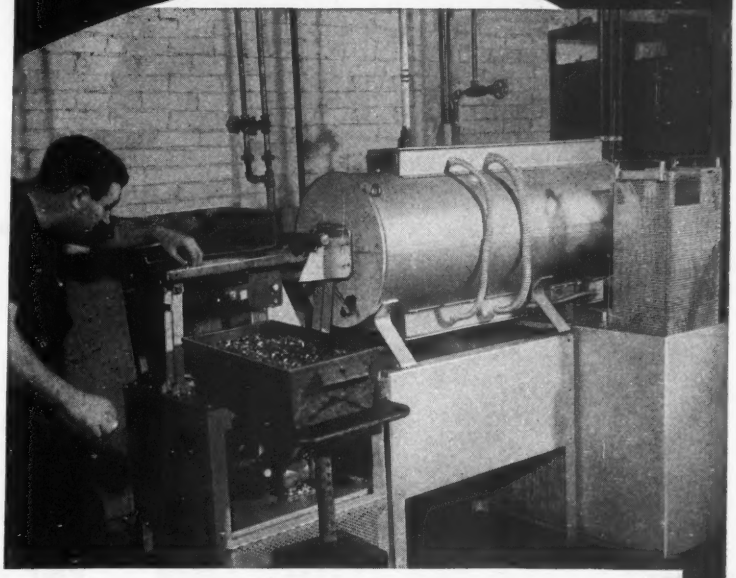
Alcoa Ups Forging Capacity

Installation of a 25,000-pound steam powered drop hammer is complete at the Vernon, Calif., plant of Aluminum Co. of America. The spring suspended installation was planned and executed by Mac-Isaac, Menk & Roach Inc., Los Angeles.

Alcoa will use the hammer to forge major aircraft sections. Reaching about 18 feet above floor level, the unit is operated through

RAYMOND MFG. CO.

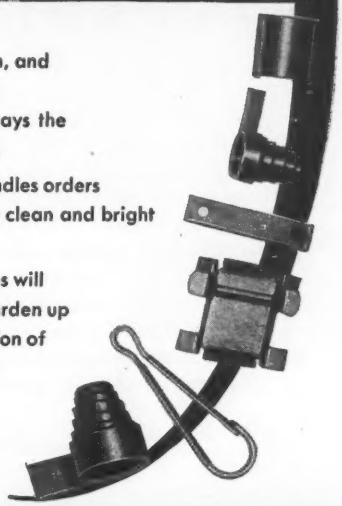
"Bright" Hardens Precision Springs in a HEVI DUTY Shaker Hearth FURNACE



"We bright harden carbon, vanadium, and stainless steel springs without distortion in our Hevi Duty Shaker Hearth furnace," says the Raymond Mfg. Co. of Corry, Pennsylvania.

"Our Hevi Duty Shaker Hearth furnace handles orders faster, and work comes out of the furnace clean and bright with no scale or decarburization."

Hevi Duty standard Shaker Hearth Furnaces will carburize, nitride, dry cyanide or bright harden up to 150 lbs. of small parts per hour. Operation of this production machine is semi-automatic. Write for bulletin HD-850 today.



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Heat Treating Furnaces... Electric Exclusively

Dry Type Transformers *Constant Current Regulators*

20 STRATEGIC LOCATIONS ..

PREPARED and PRODUCING ... *for defense industries*

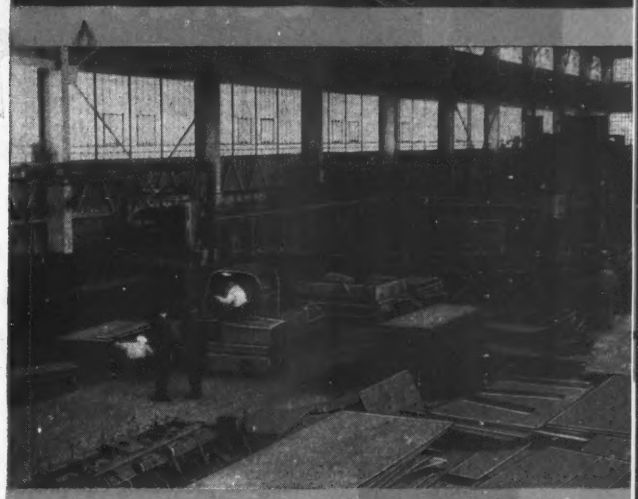
A glance at the map shows the studied manner in which Standard Steel Spring Company has located the facilities associated with its huge armor plate program. To save in distribution, plants are spotted within the area where a high percentage of defense contracts center.

An adequate supply of raw materials is also close at hand. Generally speaking, most of these properties are in the "smaller war plant" category. Plants selected for this participation were all found suitable for quick conversion. All had a proven record of previous accomplishment. These plants, equipped with the most modern machine tools and materials handling devices, have been provided with competent supervisory staffs to guide activities; to maintain the highest quality standards in volume production.

The Standard Steel Spring armor plate program is now ready to serve America's needs, come what may. It was carefully planned and prepared to produce armor plate with the greatest economy, the least waste and the utmost dispatch.

ARMOR PLATE

S..to serve you!



WITH EVERY FACILITY FOR PRODUCING ARMOR PLATE

Ready to Assemble

in gauges ¼" to 4" inclusive

Our vast facilities are geographically dispersed throughout the heart of defense activity to make possible the most economical and convenient distribution of armor plate. Our manufacturing knowledge and control is imparted to every plant associated with our armor plate program. We work in close cooperation with procurement, engineering, production and inspection. We are ready now to serve you with either flat or formed parts, fully machined, in any shape. It will pay you to check Standard Steel Spring first. Write, wire or phone us today.

Standard Steel Spring Company

ARMOR PLATE DIVISION PENOBSCOT BLDG. DETROIT, MICHIGAN

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RUBBER bonded to METAL*

*NEW "ANDAL" PROCESS BONDS RUBBER TO METAL OR CERAMICS

Rubber-metal fabrications for application in electrical control devices, conveyors, switches, contacts, controllers, control valves and a wide range of processing equipment now can be supplied in a variety of sizes and shapes.

Intricate as well as *simplified parts* can be fabricated using almost any shape or cross section of metal or ceramic material. Both *ferrous* and *non-ferrous metals* can be fabricated into the rubber parts.

Rubber compounds available for use in the metal-rubber fabrications include natural or reclaimed stocks as well as from Buna S, Buna N, Neoprene, Butyl, Thickol and other synthetics.

Rubber-bonded-to-metal parts can be furnished which will remain stable upon exposure to temperatures ranging from -75 to 200 degrees F. Special stocks featuring resistance to abrasion, weathering and various chemicals can be utilized in parts.

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a foot pedal by a three-man crew. Its 12-inch intake line feeds steam into the overhead cylinder, lifting and dropping the weight.

Base, anvil and hammer weigh 75 tons. Entire mass rests on a 24-foot-square concrete block set 21 feet below floor level and suspended on a network of steel beams. Beam ends are supported by 64 specially-designed spring units bearing a total weight of 1.2 million tons. Purpose of these springs is to absorb both noise and vibration. Maximum spring depression of 5/16-inch will result under full impact.

Electrochemists Hear Physicist

Two technical papers by M. G. Jacobson, research physicist, Mine Safety Appliance Co., Pittsburgh, were presented to the spring meeting, Electrochemical Society, in Philadelphia. First paper dealt with the theory accounting for depolarization of carbon cathodes by gaseous oxygen. The second described development and performance of instruments for detection and measurement of oxygen based on this theory.

Stretch Flattener Developed

Longren Aircraft Co., Torrance, Calif., announces completion of a stretch-flattening machine that can process integrally-stiffened extruded airframe skin sections. The job is done in volume, with flatness tolerances within requiremnts.

When the aluminum alloy integrally-stiffened extruded tubular sections are received, they are first split longitudinally, roughly flattened, then heat treated. In flattening, the heat treated sections are end-mounted between mechanical V-clamps in the tension flattening machine. One of the V-clamps remains fixed while the other is mounted on a hydraulic piston. Using hydraulic pressure, the entire sheet is then placed under tension to a point just below the material's yield strength.

After this initial tensioning, the traveling carriage with its three rigidly mounted displacement rolls is started along the sheet from the stationary jaw end. The movable chuck automatically takes up the slack of elongation and maintains even tension.

Just as the material passes un-

Skilled Springmakers . . .

with a broad background of experience and engineering know-how produce better springs at lower cost

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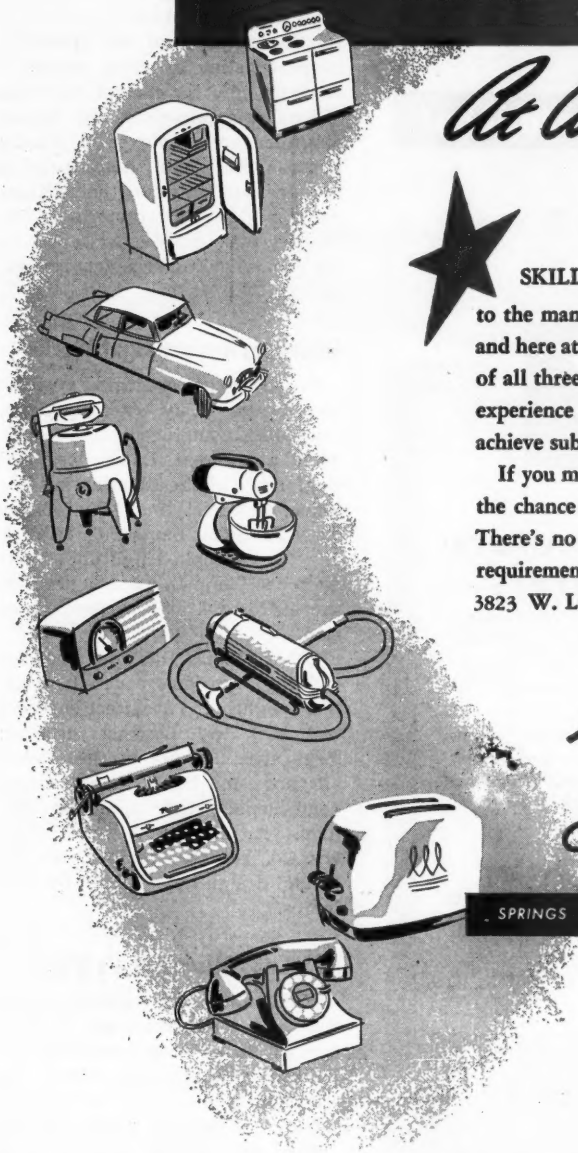

SKILL, experience and know-how are essential to the manufacture of better springs at lower cost . . . and here at Accurate, we are able to offer liberal quantities of all three. For many customers Accurate's skill, experience and know-how have made it possible to achieve substantial reductions in spring costs.

If you mass produce civilian or defense items, we'd like the chance to show you what we can do for you. There's no obligation. Just send an outlline of your requirements to ACCURATE SPRING MFG. CO., 3823 W. Lake St., Chicago 24, Illinois.

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Write for your copy of the Accurate Spring Handbook. It's full of useful data and helpful short cuts for making spring calculations.

der the center roll, the greatest elongation takes place. At this point, material is tensioned slightly beyond its yield point, and work hardening takes place. On passing the last displacement roll, material stabilizes to a permanently flattened condition.

To further assure this passive condition, angles of displacement through the rolls are carefully balanced out, thus assuring equal stress relief in both the sheet and the extruded stiffeners. After sheets have been flattened to permissible tolerances, they can be contoured as desired using conventional stretch press equipment.

Valve Specification Simplified

Revised and enlarged edition of "Equivalent Valves" manual compares valves of 18 manufacturers by material, type, pressure rating and structural variations. Designed for engineers, purchasing agents and government officials who must specify valves or check specifications made by others, it should help reduce time spent in the checking operation.

Latest edition is a 170-page loose leaf publication. It shows sizes for cast iron and bronze valves for the first time. Requests for information concerning this material should go to Equivalent Valves Co., Box 816, Station H, Los Angeles 44.

Data Show Electronic Controls

Catalog describing Thermisters, a product of Carboloy Department, General Electric Co., is available from the department. Publication contains general basic information relating to physical and operating characteristics of these electronic semi-conductor control elements.

Typical applications and wiring diagrams are employed to clarify purpose and uses. Also included are graphic data of temperature resistance ratio characteristics for the rod, disk and washer types. To get copies, write to the department, Detroit 32.

Engineers Review Light Work

Proposed comfort rating systems were evaluated by Ward Harrison, consulting engineer, Cleveland, when the Great Lakes Regional Conference of the Illuminating Engineering Society met May 5-6. Society President Samual G. Hibben, director of applied lighting, Westinghouse Lamp Division, addressed the conference at its opening session.

Other topics included in the technical sessions covered industrial lighting; architect-engineer teamwork on lighting designs; large area lighting of the louver-all type; and light, air and sound conditioning with luminous ceilings. A. C. Barr, General Electric Co., reported performance data and design applications for new lamps.

RCA Cites Microscope's Work

Radio Corp. of America marks the tenth anniversary of introduction of its electron microscope by publishing a brochure titled "The Electron Microscope at Work in Industry." Illustrated publication describes 10 case histories in which the microscope has worked to solve problems of quality control, prod-

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Now is the time to modernize your industrial machinery. For never before has American industry encountered such a challenge! Its double job of producing for defense and civilian needs demands plant machinery built stronger, to last longer.

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Special machinery is created in our shops from your own design . . . or we will design and fabricate to solve your specific problem.

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Firth Sterling "MOLY" HIGH SPEED STEEL

can handle many jobs

BETTER . . . FASTER . . . CHEAPER

There is a Firth Sterling high speed steel for every purpose . . . whether high speed cutting, holding close tolerances, machining abrasive material, general shop work, or specialized application.

The *right* steel will increase production, reduce down-time and save many times the actual cost of the steel.

Choose the RIGHT STEEL

SEND FOR THESE HELPFUL BULLETINS

CIRCLE M	An 8% cobalt moly steel possessing great cutting capacity, unusual RED-HARDNESS value, and toughness.	For complete information on Circle M, ask for Bulletin SL-2032.
NEW VAN M3 CHIP	Its higher vanadium and carbon content combine to produce superior WEAR-RESISTANCE . . . ideal for cutting hard materials . . . and for holding close tolerances.	For complete information on Van-Chip, ask for Bulletin SL-2033.
STAR-MO M-2	A moly-tungsten steel recommended for GENERAL MACHINING operations.	For complete information on Star-Mo, ask for Bulletin SL-2015.
HI-MO	A made-to-order steel for SPECIAL PURPOSE applications.	Complete information about Hi-Mo will be furnished upon request.

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SIGNODE STRAPPED PALLET WINS STOLLER AWARD!

Shown are two examples of W. E. Christopherson's better packaging method which won the Irving J. Stoller Special Award at the 1951 SIMPMHE Convention.

Weight, shipping charges reduced 19%... materials, labor costs, 72%

Strapped pallets answered a packaging puzzle that confronted W. E. Christopherson, Supervisor of Packaging and Crating, Douglas Aircraft Company, Santa Monica, California.

Fire prevention kits for aircraft, valued at $4,748.00 each, formerly were packaged in four-carton units. These were repacked in a heavy wooden box and Signode steel strapping applied. Weight and packaging costs were too high.

Mr. Christopherson had a new idea. Components of each kit were put directly into the cartons—all 4,430 pieces—already inspected and packaged. Now, each kit of 4 cartons was stacked on a sturdy, disposable pallet, bound together in a single unit with Signode steel strapping.

Saves weight, time, money

Weight dropped 73 pounds! Labor and material costs per unit dropped $11.83! Total savings per box shipped by freight were $21.16 per unit! 605 kits were shipped by the new method of packaging. At savings per kit of $21.16, total savings amounted to $12,801.80!

Palletize for Profit Yourself!

If you want to know how improved methods of palletizing can cut your packaging, handling and shipping costs, ask to have an experienced Signode field man call on you. Signode perfected many of the most widely used palletizing methods.

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uct improvement and development of new products in industrial laboratories.

It emphasizes typical applications by industries in such fields as automotive, chemical processing, metal fabricating, petroleum, radio and electric. Copies of form 2R8195 are available from the scientific instrument section, RCA Victor Division, Camden 2, N. J.

Molding Technique Exhibited

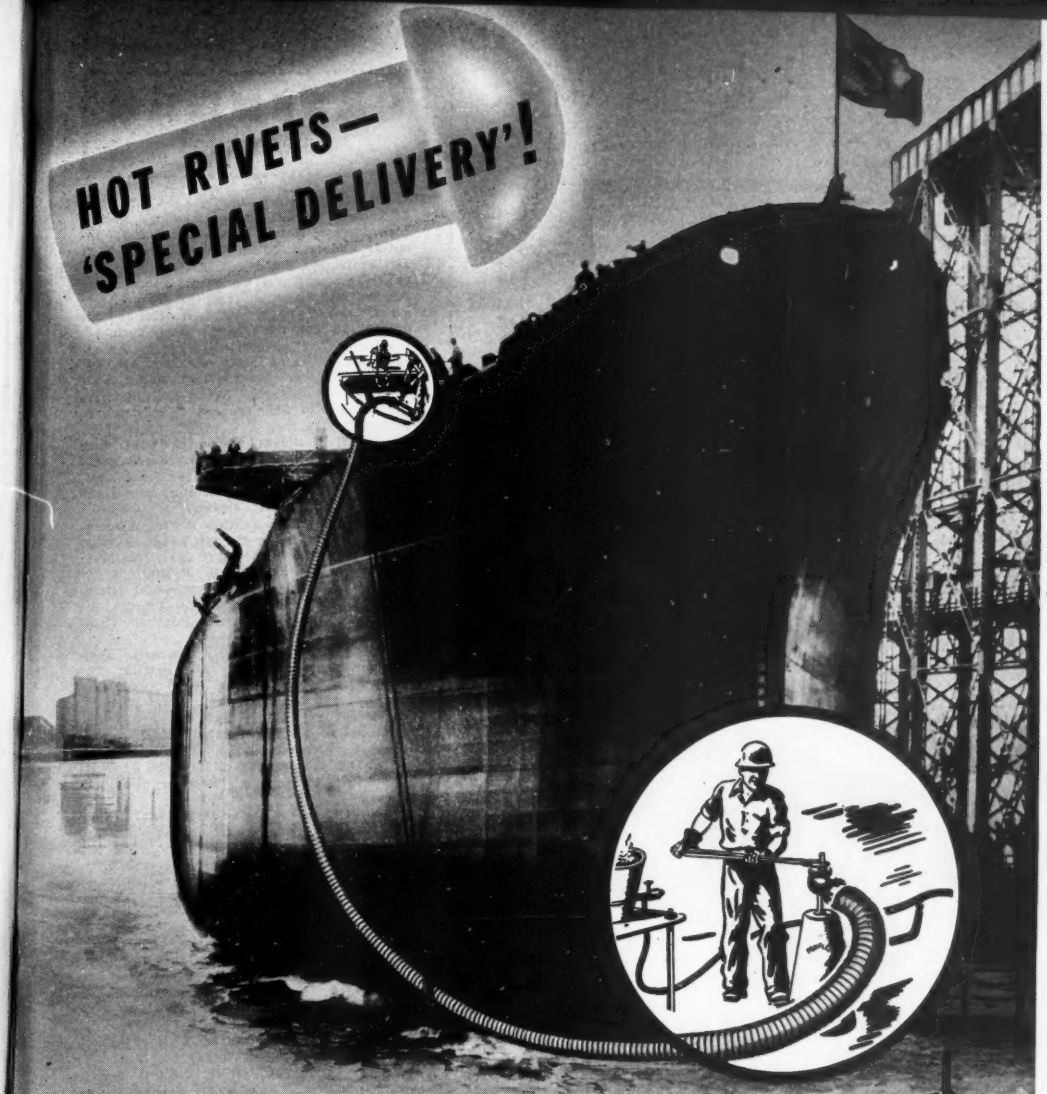
Shell molding is featured in an exhibit sponsored jointly by Chemical Division, Borden Co., and Kuhlman Electric Oven Co. at the American Foundry Congress and Exposition. Operating exhibit shows the complete process from mold-making and assembly to actual pouring of castings in gray iron.

A year ago, only three important foundries were interested in shell molding. Today, the process is used in making many automotive parts that formerly were fabricated, forged or cast by conventional methods. It is also used for railroad castings, radiation and boiler sections, aviation castings, plumbing fittings, etc.

Process exhibited reduces molding activity to pushbutton operation that can be performed by unskilled employees. The technique is designed to permit precision casting at conventional sand casting costs; reduce machining operations due to greater accuracy; reduce sand handling and the need for handling equipment and occupy less factory space. Also claimed is a better yield due to smaller sprue, risers and runners.

At the outset, the process produced one mold per pattern every three of four minutes. Advanced technology has, in some cases, reduced the molding period to only 30 seconds. An upper limit of 20 to 30 pounds per casting has been increased to 200 pounds with higher limits entirely probable. Where steel shot was originally the preferred supporting material, sand and other coarser aggregates are now used successfully. In cases of some lighter castings, no supporting material is needed at all. Use of oil and gas fired ovens as heat sources is now supplemented by electrical resistance heating units and infra-red radiant heat.

HOT RIVETS— 'SPECIAL DELIVERY'!



Penflex Pneumatic Rivet Passer Speeds Rivet Delivery, Cuts Passing Costs 20%!

Hot rivets delivered at high speeds around corners, curves, five stories up, or straight down with the Penflex Pneumatic Rivet Passer! Proved on-the-job for speed, economy and safeiy. Rivet travels fast through special Penflex All-Metal Rivet Hose. Corrugations provide ideal tumbling barrel for rivets delivered hot and free from scale.

Many Penflex units now in use in shipyards, on bridge construction projects, and by plate and structural fabricators. Find out today how the Penflex Pneumatic Rivet Passer can speed up fabricating work and create better profits for you. Write for your copy of the Penflex Pneumatic Rivet Passer folder. Address Dept. RP1.

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Penflex

HEART OF INDUSTRY'S LIFE LINES

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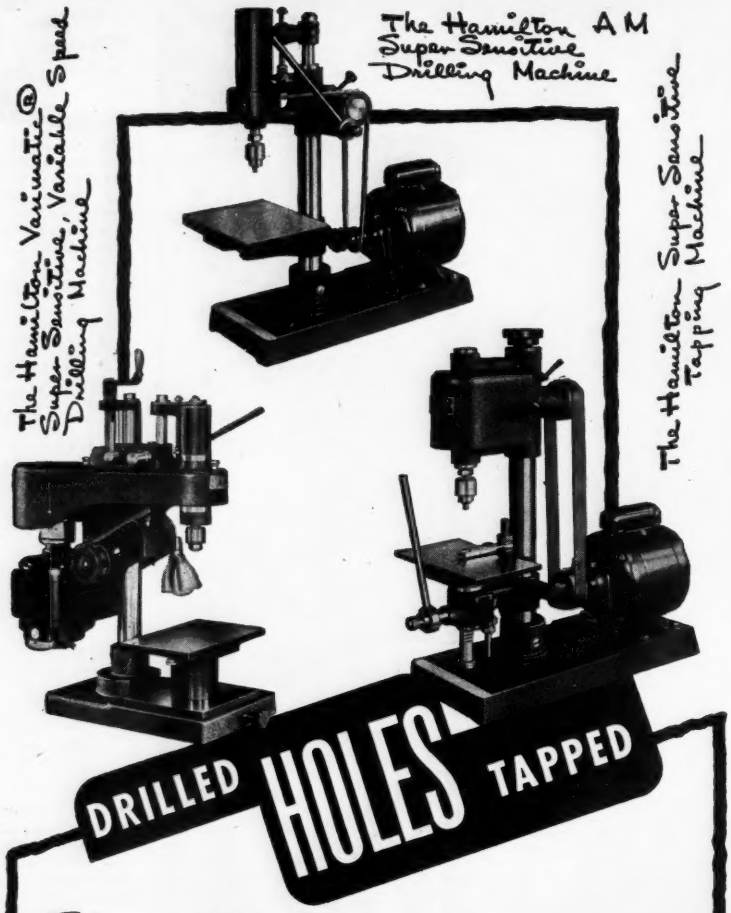
Penflex Pneumatic Rivet Passer permits forge to be placed a long distance away from riveting area. Prevents noxious fumes and gases from entering confined quarters.

Riveter may be located around a sharp curve or out of sight, yet rivet finds its exact mark every time.

Accidents eliminated. Getting hit with misguided hot rivets cannot occur with unit. Metal hose transmission protects workers in area.

Penflex Pneumatic Rivet Passer is ideal for difficult-to-reach areas in riveting. Forge can be located more than 150 feet away from riveter.

Work is made easier in cramped or inaccessible areas with the Penflex Pneumatic Rivet Passer.



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ACCURATE SMALL HOLE PRODUCTION

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The Hamilton TAPPER,

each a bench type, super-sensitive machine with ample clearances and travel, incorporate such precision that work is always held well within the tolerance allowed, and such stamina that they maintain their accuracy year after year even under heavy production loads. Our free Bulletin No. V-472 provides full information including specifications. Write now! Tomorrow you may need the information.

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CALENDAR
OF MEETINGS

May 11-14, American Institute of Chemical Engineers: Annual spring meeting, French Lick Springs Hotel, French Lick, Ind. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

May 11-14, Industrial Furnace Manufacturers Association: Annual meeting, The Homestead, Hot Springs, Va. Association address: 420 Lexington Ave., New York 17. Secretary: V. P. Gopcevic.

May 12-14, Liquefied Petroleum Gas Association Inc.: Annual meeting and exhibit, Palmer House, Chicago. Association address: 11 S. LaSalle St., Chicago 3. Secretary: Arthur C. Kreutzer.

May 14-15, National Industrial Conference Board: Spring conference, Waldorf-Astoria Hotel, New York. Address: 247 Park Ave., New York 17. Assistant director, conference division: (Mrs.) I. E. Brown.

May 14-16, American Leather Belting Association: Spring meeting, Skytop Lodge, Skytop, Pa. Association address: 320 Broadway, New York 7. Secretary: E. R. Rath.

May 14-16, Society for Experimental Stress Analysis: Spring meeting, Hotel Lincoln, Indianapolis. Society address: Box 168, Cambridge, Mass.

May 18-21, Copper & Brass Research Association: Annual meeting and exhibit, The Homestead, Hot Springs, Va. Association address: 420 Lexington Ave., New York 17. Secretary: Bertram B. Caddle.

May 19, Rail Steel Bar Association: Annual meeting, General Brock Hotel, Niagara Falls, Ont. Association address: 38 S. Dearborn St., Chicago 3. Secretary: W. H. Jacobs.

May 19, Cleveland Engineering Society, Construction Division: Conference on accoustics —noise and its control, Engineering Society Bldg., Cleveland. Society address: 2136 E. 19th St., Cleveland 15. Executive secretary: (Miss) Mary Manwell.

May 19-20, American Steel Warehouse Association Inc.: Annual meeting, Waldorf-Astoria Hotel, New York. Association address: 442 Terminal Tower, Cleveland 13. President: Walter S. Doxsey.

May 19-21, National Industrial Distributors Association: Annual meeting, Atlantic City, N. J. Association address: 1900 Arch St., Philadelphia 3. Secretary: H. R. Rinehart.

May 19-21, American Supply & Machinery Manufacturers Association: Annual convention and conference booth activity, Hotel Traymore, Atlantic City, N. J. Association address: 731-732 DuPont Circle Bldg., Washington. General manager: R. Kennedy Hansen.

May 20-21, Nuclear Energy Conference: Michigan State College, E. Lansing, Mich. Program chairman: D. J. Renwick, Mechanical Engineering Dept.

May 21-22, American Iron & Steel Institute: Annual meeting, Waldorf - Astoria Hotel New York. Institute address: 350 Fifth Ave., New York 1. Meeting director: Frank Ragland.

May 21-23, Gas Appliance Manufacturers Association: Spring meeting, The Broadmoor, Colorado Springs, Colo. Association address: 60 E. 42nd St., New York. Secretary: H. Leigh Whitelaw.

May 22-23, American Coal Sales Association: Annual convention, The Homestead, Hot Springs, Va. Association address: 1625 Eye St., Washington 6.

May 22-24, American Society for Quality Control: Annual meeting & exhibit, War Memorial Auditorium, Syracuse, N. Y. Society address: 70 E. 45th St., New York 17. Secretary: Alfred L. Davis.

May 25-28, National Association of Purchasing Agents: Annual international convention & exposition, Convention Hall, Atlantic City, N. J. Association address: 11 Park Place, New York 7. Executive secretary: George Renard.

June 1-6, Society of Automotive Engineers: Summer meeting, Ambassador & Ritz-Carlton Hotels, Atlantic City, N. J. Society

(*Continued on p.* 151)

teamwork
makes fine steels at Jessop
Visit revitalized Jessop at Washington Pa. and you'll be impressed by the comradeship, teamwork, and intense activity you see. You'll find Jessop people in the plant and in the office working closely together with evident purpose. Their purpose is the production of the finest special steels you can possibly buy. If you buy any special steels at all, remember that every man on the Jessop team wants you *personally* as a satisfied customer.
high speed steels
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high speed and alloy saw steels
hot work die steels
carbon and alloy steels
stainless and heat resisting steels
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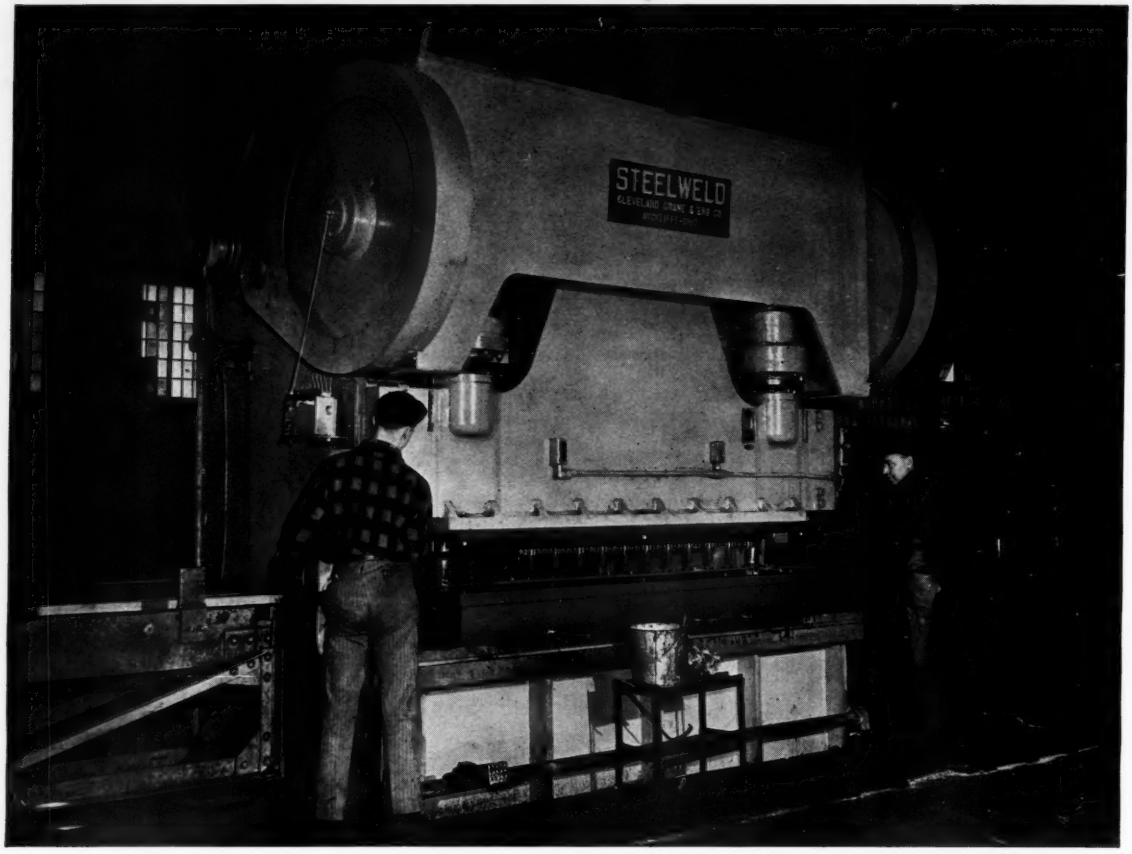

Model K5-8 Press, one of two Steelwelds in continuous 24-hour service since 1945, punching a series of holes in bridge floor bars.

2,000 Bars slotted every 8-Hour shift

Although originally conceived as machines for bending metal, Steelweld Presses are now serving a wide variety of uses. Two large Steelwelds at the MacDonald, Ohio Plant of the Carnegie-Illinois Steel Corporation are used solely for punching slots in steel bars, beams and T-sections for bridge flooring.

The time of one press is devoted largely to punching slots in bars 1⅝" and 1-7/16" wide by ¼" thick by 6'-2" long. Each bar contains 13 slots ½" wide by ⅝" to ⅞" long, and 24 slots ¼" wide by ⅝" to ⅞" long, a total of 37 slots all punched at one time. Two thousand bars are slotted in an eight hour shift.

Another standard job is that of punching 2-inch long slots on 4-inch centers in I-beams for bridge sections. These are punched 24 at a time. The beams vary in length from 24'-0" to 45'-0". Two hundred 40'-0" beams are punched in an 8-hour period.

Both Steelweld Presses have been in this service 24 hours a day since 1945.

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(*Concluded from p. 148*)

address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

June 2-3, Multiple V-Belt Drive & Mechanical Power Transmission Association: Spring meeting. Edgewater Beach Hotel, Chicago. Association address: 7 W. Madison St., Chicago 2. Secretary: Harry P. Dolan.

June 2-4, American Gear Manufacturers Association: Annual meeting, The Homestead, Hot Springs, Va. Association address: 302 Empire Bldg., Pittsburgh 22. Executive secretary: John C. Sears.

June 2-13, Canadian International Trade Fair, Exhibition Grounds, Toronto.

June 3-6, National District Heating Association: Annual meeting, Skytop Lodge, Skytop, Pa. Association address: 827 N. Euclid Ave., Pittsburgh 6. Secretary-treasurer: John F. Collins.

June 5-7, Electric Metal Makers Guild Inc.: Annual meeting, French Lick Springs Hotel, French Lick, Ind. Guild address: Box 6026, Mt. Washington Station, Pittsburgh. Secretary: C. B. Williams.

June 9-21, International Organization for Standardization: Triennial meeting, Columbia University, New York. Secretary-general: Henri St. Leger, Geneva, Switzerland. Host association: American Standards Association, 70 E. 45th St., New York 17. Secretary: George F. Hussey Jr.

June 13, The Wire Association: Regional meeting, Hotel Biltmore, Los Angeles. Association address: 453 Main St., Stamford, Conn. Executive secretary: Richard E. Brown.

June 15-18, National Association of Cost Accountants: Annual international cost conference, Waldorf-Astoria Hotel, New York. Association address: 505 Park Ave., New York 22. Secretary: A. B. Gunnarson.

June 15-19, American Society of Mechanical Engineers: Semi-annual meeting, Sheraton-Gibson Hotel, Cincinnati. Society address: 29 W. 39th St., New York 18. Secretary: C. E. Davies.

June 16-17, Malleable Founders Society: Annual meeting, The Homestead, Hot Springs, Va. Society address: 1800 Union Commerce Bldg., Cleveland. Secretary: Lowell D. Ryan.

June 16-20, American Electroplaters Society: Annual meeting and industrial finishing exposition, Hotel Conrad Hilton and International Amphitheatre, Chicago. Society address: Box 168, Jenkintown, Pa. Secretary: D. Gardner Foulke.

June 17-19, American Management Association: General conference, Waldorf-Astoria Hotel, New York. Association address: 330 W. 42nd St., New York.

June 22-24, Alloy Casting Institute: Annual meeting, The Homestead, Hot Springs, Va. Institute address: 32 Third Ave., Mineola, N. Y. Secretary: E. A. Schoefer.

June 23-26, Radio-Television Manufacturers Association: Annual convention, Palmer House, Chicago. Association address: 777 14th St. NW, Washington 5. Secretary: James D. Secrest.

June 23-27, American Institute of Electrical Engineers: Summer general meeting, Hotel Nicollet, Minneapolis. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

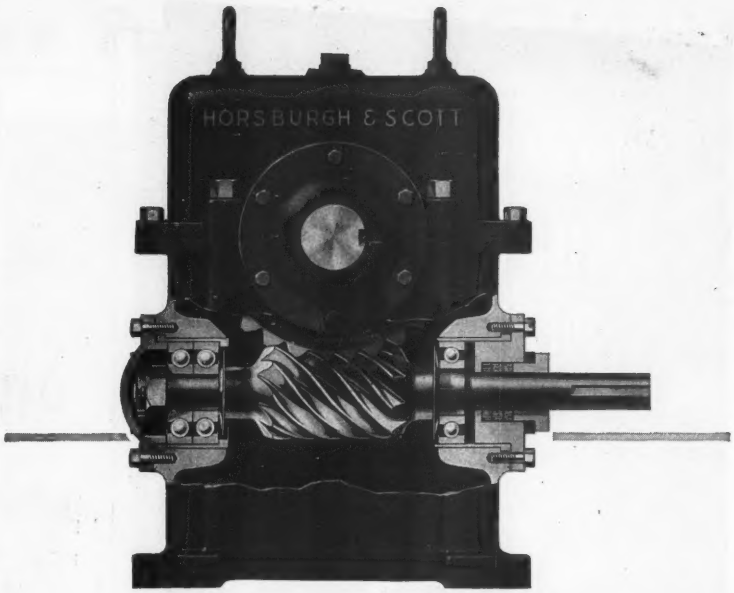
June 23-27, American Society for Testing Materials: 50th anniversary meeting and exhibit, Hotels Statler and New Yorker, New York. Society address: 1916 Race St., Philadelphia. Secretary: C. L. Warwick.

June 23-27, American Society of Mechanical Engineers: Oil & Gas Power Division conference, Hotel Statler, Buffalo, N. Y. Society address: 29 W. 39th St., New York 18. Secretary: C. E. Davies.

June 29-July 2, National Industrial Advertisers Association: Annual meeting, Palmer House, Chicago. Association address: 1776 Broadway, New York. Executive secretary: Blaine G. Wiley.

June 29-July 2, Caster & Floor Truck Manufacturers Association: Joint material handling, industrial meeting, Grand Hotel, Mackinack Island, Mich. Association address: 7 W. Madison St., Chicago 2. Secretary: Harry P. Dolan.

June 30-July 2, Material Handling Institute: Annual meeting, Grand Hotel, Mackinack Island, Mich. Institute address: 731-732 DuPont Circle Bldg., Washington 6. Managing director: R. Kennedy Hanson.



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by Horsburgh & Scott

Every modern element for reducing friction and other losses is incorporated in these reducers...hardened and accurately ground worm made from special case hardening steel, accurately made gear from chilled bronze to H & S specifications, anti-friction bearings, accurate alignment, smooth streamline interiors and proper lubrication. Due to its glass hardness, worm wear is nil...due to its accuracy, gear wear is negligible. Throughout their long life these reducers maintain their initial high efficiency.

10 ADVANTAGES

Extreme Simplicity	Extra Strength
Compactness	Low Maintenance
Efficiency	Oil-tight Housing
Long Life	Quiet Operation
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GEARS AND SPEED REDUCERS

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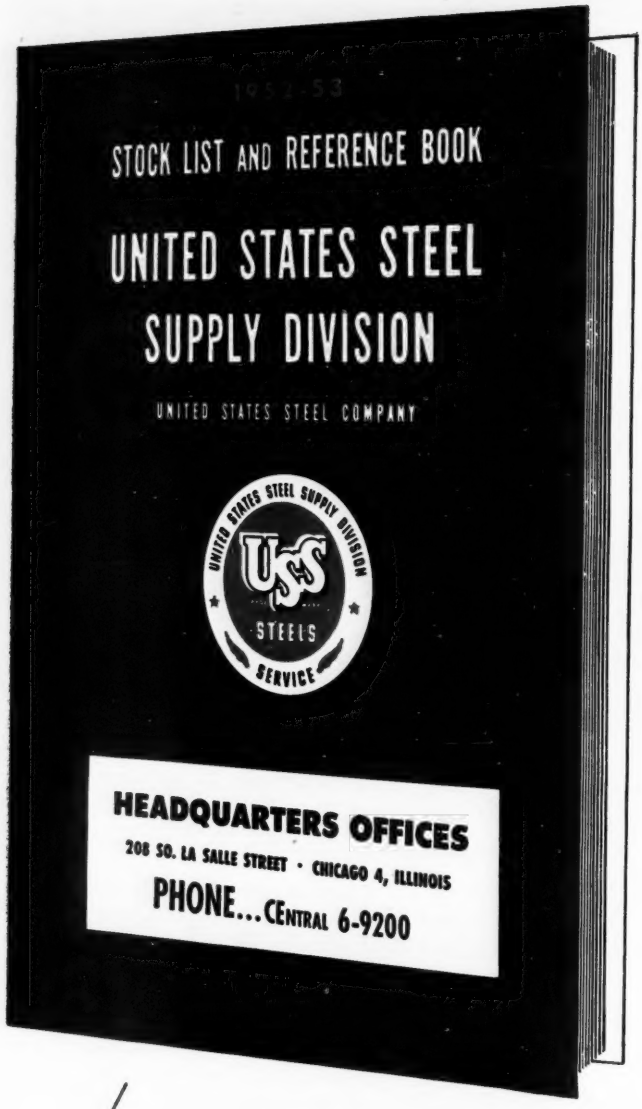
Send note on Company Letterhead for Speed Reducer Catalog 46



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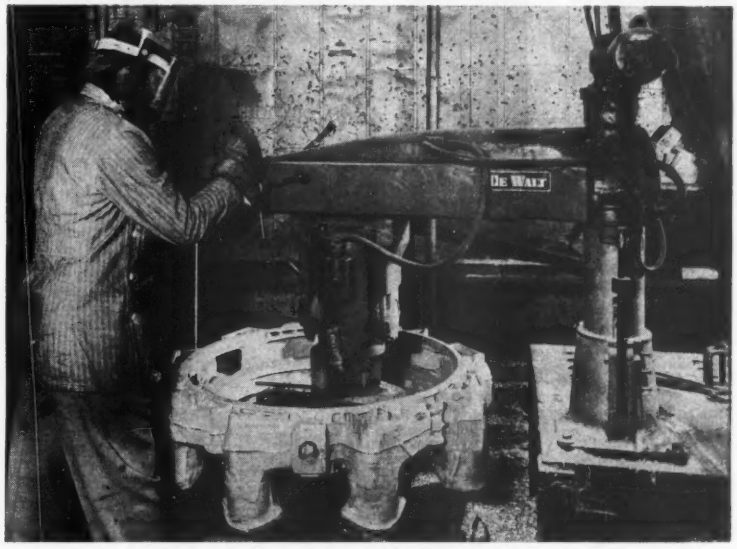
UNITED STATES STEEL

Metal Cutting Line Expanded

USE REPLY CARD—CIRCLE No. 1

Addition of several models to its line of metal cutting machines is announced by DeWalt Inc., Lancaster, Pa., subsidiary of American Machine & Foundry Co. First of the heavy-duty cutters, the model ME-2F, is a 10-hp foundry sprue-cutter. Machine is capable of heavy foundry operations, such as cutting risers to 4 inches diameter on iron castings and risers to 2 inches diameter for nickel and steel castings.

A companion unit, the ME-6 15-hp dual column machine, is the largest in the range of equipment introduced for heavy cutting. In one application, this tool cuts stainless plate 2 inches thick and 96 inches wide. Third machine is the 10-hp ME-1, specializing in cutting billets and heavy tubing.

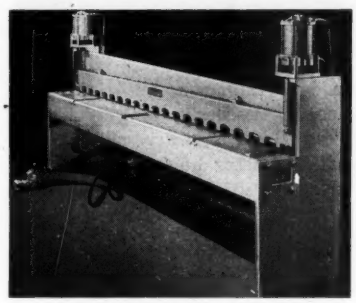


THREE MACHINES WIDEN HEAVY CUTTING CAPACITIES
. . . 10-hp model ME-2F cuts risers to 4 inches diameter on iron castings

Air Power Squaring Shears

USE REPLY CARD—CIRCLE No. 2

Niagara Machine & Tool Works, 637-697 Northland Ave., Buffalo 11, N. Y., offers a line of air power squaring shears made in simplified design to reduce initial cost and maintenance. Construction eliminates such parts as flywheels, gears, clutches, motors and electrical controls. Air from the average shop system, at pressures 70-80 psi, operates the tool.



SIMPLIFIED DESIGN CUTS COST
. . . eliminates motors, electrical controls

Depressing the foot valve automatically clamps the holddown and lowers crossheads to complete the cut. Flexible air hose for the treadle permits operator to trip the shear from any convenient location. All main components are formed from welded steel plate. Quick adjusting back gage is standard equipment on the smaller sizes; micrometer, ball bearing, double bracket parallel back gage graduated in 1/128-inch is a feature of the 8 and 10-foot lengths. All machines have front brackets, front gage bar and two side gages.

Tool Grinds Die Clearances

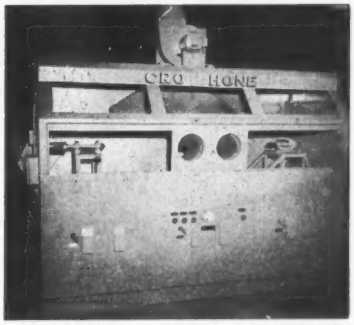
USE REPLY CARD—CIRCLE No. 3

Wide variety of grinding operations including precision grinding die clearances and sharpening cutter dies and punches are possible on a Milwaukee profile grinder, made by Rice Pump & Machine Co., N. Milwaukee St., Grafton, Wis. Special features include a high-speed motor; reciprocating spindle mounted in self-aligning bearings; and a collet chuck that centers and grips grinding wheel shanks. An 11-inch square table tilts 30 degrees to front and 15 degrees to side. Built-in diamond wheel dresser is attached under the table.

Wet Blaster Cleans Jet Units

USE REPLY CARD—CIRCLE No. 4

One operator can clean the 5-foot turbine wheel and shaft assembly of a J35 engine prior to assembly with a wet-blaster built by Cro-Plate Co. Inc., Hartford, Conn. Cleaner is 8 x 4 x 7 feet, incorporating a track-mounted dolly for loading assembly into the cabinet.



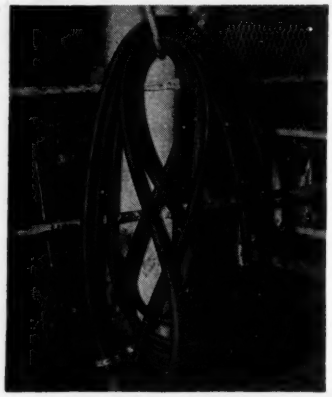
ONE OPERATOR WORKS THREE STATIONS
. . . track-mounted dolly loads assemblies

Assembly is rotated on centers through a variable-speed Graham transmission that rotates 0 to 28 rpm. Model has three stations with a sliding panel connected to both

REPLY CARDS

on page 167 will bring you more information on any new products and equipment in this section.

HEWITT-ROBINS



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HEWITT-ROBINS HR INCORPORATED

HEWITT RUBBER DIVISION

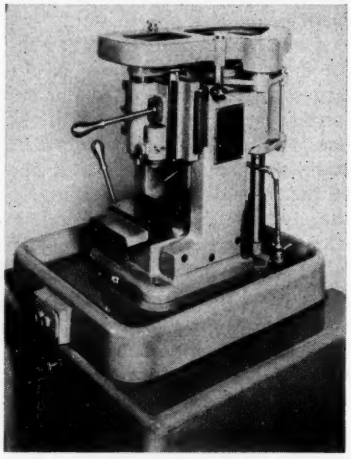
240 Kensington Avenue, Buffalo 5, N. Y.

ends of the cabinet by an accordion-type rubber curtain. Operator moves to the three stations to accomplish the manual continuous wet-blasting operation. Lights and a blower to exhaust blasting vapors are built in. Air requirements are 80 cfm at 90 psi.

Precision Profiler Improved

USE REPLY CARD—CIRCLE No. 5

Redesign of its motor-driven precision profiling machine is announced by Wade Tool Co., Waltham, Mass. Offered previously only for bench mounting, the current model can be ordered with a



. . . weight increased; V-belt drive applied

pedestal cabinet as optional equipment. Profiler's weight is increased and it is driven by V-belt drive. Cutter holder collets have improved grip, as has the collet in the follower spindle.

The compact unit is designed for precision work on small mechanical parts. It takes 24 x 26 inches floor space and is 57 inches high. Standard 1750 rpm, 1/3-hp, 3-phase motor provides 8 spindle speeds from 437 to 7000 rpm. To obtain eight spindle speeds from 875 to 14,000 rpm, a 3-phase, 3450 rpm, 1/3-hp motor is used.

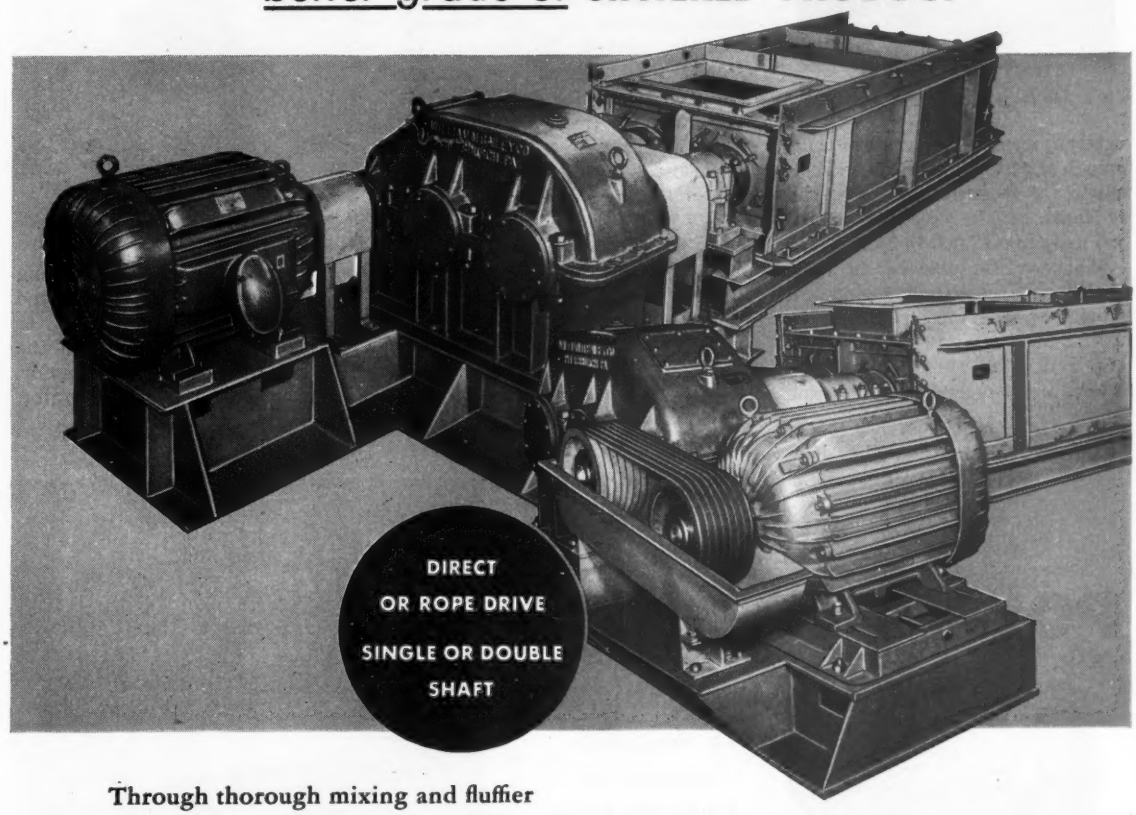
Internal-External Grinder

USE REPLY CARD—CIRCLE No. 6

Small hole grinder that can be equipped for external work is offered by Rivett Lathe & Grinder Inc., Brighton 35, Boston, Mass. Model 84 grinds holes to 3 inches diameter, with maximum 4-inch depth depending on diameter. It

Bailey SINTERING PLANT PUG MILLS

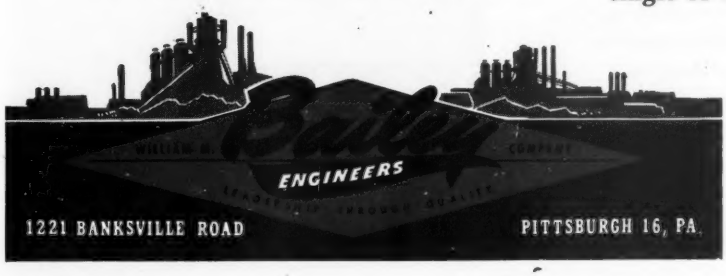
PERMIT A *more uniform,* *better grade of* SINTERED PRODUCT



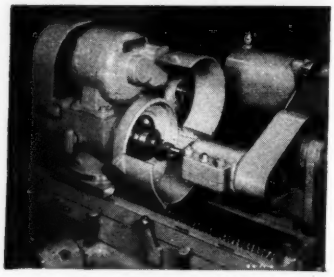
Through thorough mixing and fluffier material, the Bailey Sintering Plant Pug Mill produces a *better* sintered product. With this machine, a higher bed can be used without increasing the wind box vacuum. The result is greater tonnage of more uniform, better grade materials.

These mills can be built to any desired capacity, direct or rope drive, single or double shaft.

Send for new bulletin giving full information on all Bailey Pug Mills.



grinds externally to 3 inches diameter, with length of 4 inches. Featuring operating flexibility, the unit has interchangeable motor-driven wheelheads for internal and



. . . can be equipped for external work

external spindles. Correct internal spindle with removable arbor, chuck for mounted wheels or solid shaft can be selected for the job in speeds 12,000 to 35,000 rpm.

Workhead or table can be swiveled for taper grinding and micrometer table stop can position work exactly for shoulder grinding, using fine hand table travel. Workhead swivels 90 degrees each side of center for bevel and taper grinding. Its spindle is mounted on precision ball bearings and has three speeds of 200, 400 and 600 rpm. External wheelhead spindle is driven by a built-in, dynamically balanced motor at 3450 rpm.

Mercury-Cathode Analyzer

USE REPLY CARD—CIRCLE No. 7

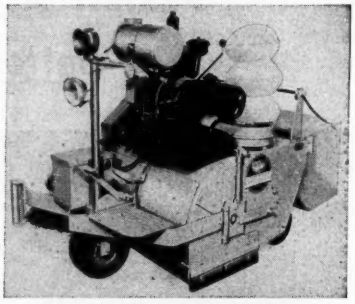
Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill., offers its Dual Mercalyzer made for rapid removal of heavy metals from solution by the mercury cathode method. Machine is designed for research and control work as a tool for determination, separation or removal of metals and quantitative analysis by electrodeposition. Unit removes up to 5 grams of metal rapidly because of its wide range and renewable surface mercury cathode. Dual controls permit two determinations to be run simultaneously and independently.

Machine operates from 115 or 230-v ac. Current is controlled by a single knob and polarity of electrodes can be reversed for each side. Vacuum connection is provided for glass hoods to permit removal of acid fumes.

Power Sweeper Line Expanded

USE REPLY CARD—CIRCLE No. 8

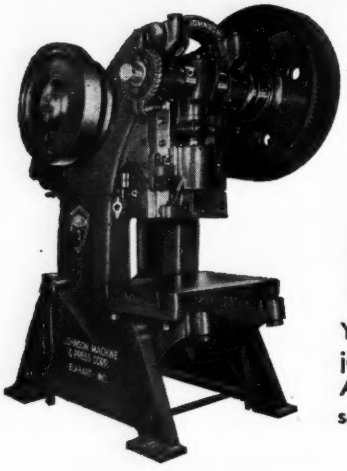
Wilshire Power Sweeper Co., 526 W. Chevy Chase Dr., Glendale 4, Calif., offers its model 1000-S



. . . cleans interior, exterior surfaces

power sweeper, made for cleaning interior and exterior floors and paved surfaces. In addition to continuous duty equipment, the model has a self-starter motor, storage battery and generator.

JOHNSON Bonus Built
POWER PRESSES



15 MODELS
CAPACITIES OF
16 to 90 Tons

RUGGED
DEPENDABLE
TIME-TESTED

You can handle larger jobs on smaller presses. Ask about the extra safety features.

Write for Bulletin 52 . . . a complete description of all Johnson's 14 models. Request data sheet on the Hydra-Shear.

NEW . . . DIFFERENT . . . AND BETTER for real production shearing

the HYDRA-SHEAR
to handle up to 10 gauge in 6' - 8' - 10' lengths. No gears or clutch . . . Overload hazards eliminated . . . Lessens curl and burring.

Johnson Machine and Press Corp.
620 W. INDIANA AVE. ELKHART, INDIANA

AN URGENT MESSAGE

Brass mill scrap needed to fill vital orders

Your Brass Mill Scrap has double value today. In addition to bringing you a good price, it will bring vital metal back to the production lines where it is sorely needed.

The defense program, as well as many civilian needs, is using up brass and copper as never before. In order to keep production up and reduce the shortage, it is important that every pile of brass mill scrap in your factory—even if it is only a few hundred pounds—be put back in circulation. Call the Chase warehouse nearest you. We will see that your brass mill scrap is picked up at once.

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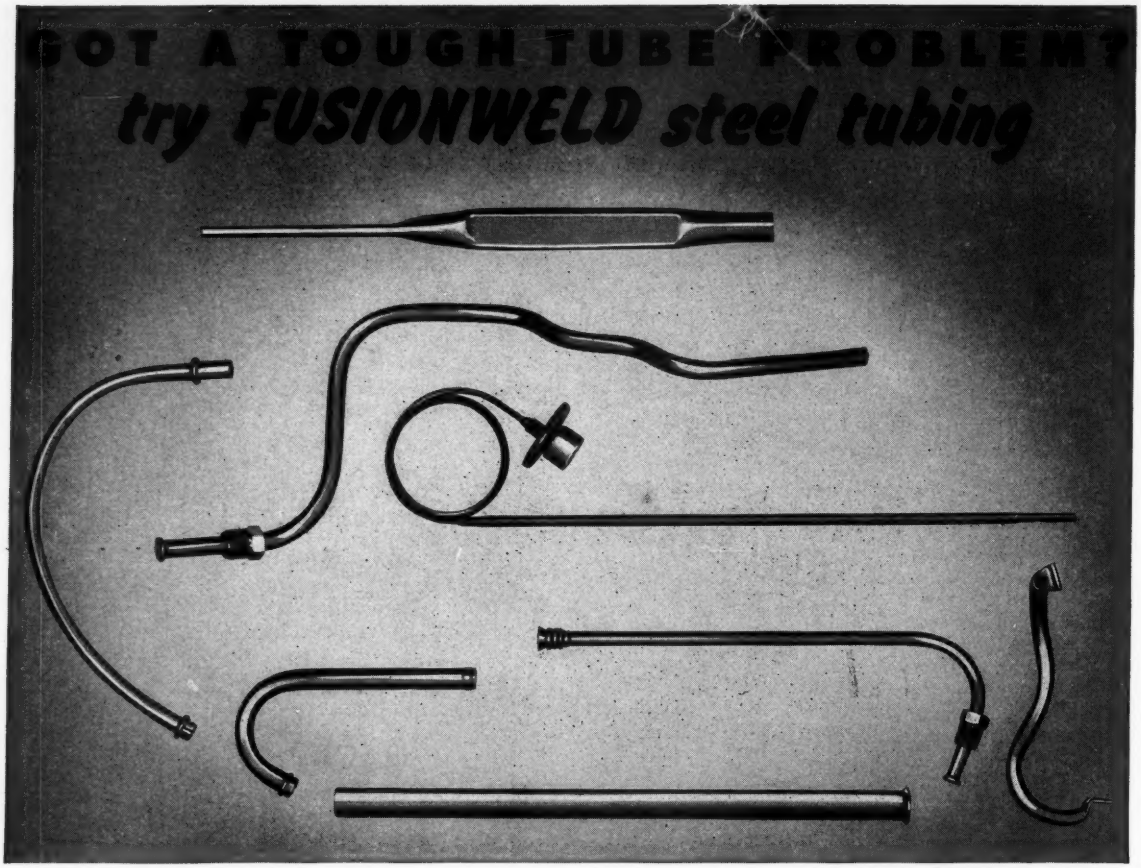
Boston	Detroit	Minneapolis	Providence	
Chicago	Houston†	Newark	Rochester†	(†sales office only)
Cincinnati	Indianapolis	New Orleans	St. Louis	



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EXTREME DUCTILITY
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SUPERIOR TENSIBILITY
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GREATER ECONOMY

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To simplify a problem is to solve it. This has been successfully done with FUSIONWELD Steel Tubing. Many "big name" manufacturers have discovered a solution to their most complicated tubing problem with AVON FUSIONWELD.

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We manufacture FUSIONWELD steel tubing and fabricate to your special needs and specifications. Inquiries solicited—samples submitted. May we hear from you?

3/16" O.D. to 5/8" O.D. PLAIN OR TERNE COATED

"The Tubing With a Future"

AVON TUBE DIVISION

HIGBIE MFG. COMPANY • ROCHESTER, MICHIGAN

Transmission is automotive type with three speeds forward and one reverse.

Sprinkling or sweeping compounds to lay the dust are unnecessary. Sweeper draws dust-laden air from the top of the hopper and discharges it through a cyclone-type spinner that separates the dust from the debris. Forty-eight-inch model 1000-S sweeps about 90,000 sq ft per hour. Model 1000, a 36-inch size of similar design introduced previously, sweeps 65,000 sq ft.

Hopper Handles Bulky Loads

USE REPLY CARD—CIRCLE No. 9

High-lift platform truck in 4000-pound capacity with extra-large 80 cu ft end-dump hopper is offered by Philadelphia Division, Yale & Towne Mfg. Co., Philadelphia 15, Pa. Hopper is designed for handling bulky loads of loose material, including metal chips, scrap or waste. It can be tilted downward to scoop up loads or can be loaded from overhead. Truck is the company's standard 4000-pound electric high-lift platform model with platform shortened to accommodate the hopper. Platform elevating mechanism is used to dump the hopper.

. . . totes loose material in 80-cu ft dump

Portable Stud Welder

USE REPLY CARD—CIRCLE No. 10

Graham Mfg. Corp., 1541 E. Eight Mile Rd., Ferndale 20, Mich., announces addition of a portable unit to its line of stud welding equipment. Operating from an electrical connection in 110, 220 or 440-v ac, the No. 3000 indicates ready application. In operation, the operator loads stud in the collet and applies a small amount of pressure to a spring-loaded holder, which

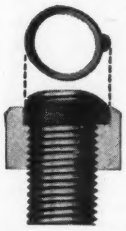
THERE IS NO OTHER FASTENER LIKE THIS!

IF YOU are one of those people who believes a cotter pin is the only way to hold anything positively on a shaft you will be surprised at tests made on Security Locknuts. Authoritative tests have proved Security Locknuts practically vibration proof.

Security Locknuts stay "put" where you wrench them even in the face of vibration that destroys the bolt. They permit accurate adjustments with a torque wrench. They are complete as a unit. There is nothing to line up. Installation involves only one operation and there are no holes to weaken the bolt or stud.

Security Nuts can be adjusted and re-adjusted any number of times but more important, they can be *removed and re-used over and over again without materially losing their locking power and without damage to the bolt.* We'd like to have you see the results of these tests. If you have a vibration or fastener problem, Security Locknuts are a dependable solution and may save you money over methods you are now using.

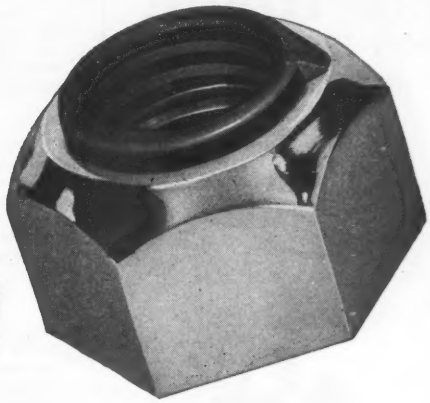
Security Locknuts are made in 3/8 in. to 3 in. bolt sizes. Ask to see the Security Locknut Tests.



The picture above shows a cross-section of a Security Locknut. The insert, indicated removed, is of high quality heat treated, alloy spring steel and becomes a permanent part of the nut.

The insert is elliptical in shape and this design causes the retainer to grip the bolt with the terrific tension that only spring steel of great strength could exert and prevent the nut from turning. Simple—dependable — positive!

SECURITY LOCKNUT CORPORATION
North Ave. and 15th Ave., Melrose Park, Ill.



Security
The Nut You Can't Shake Loose

SPECIAL OFFER! Here's an easy way to arrive at thread tolerance figures. Ask for a Security Thread Tolerance Chart. Just spin the dial and you have the figure you need. Send the coupon. It's yours for the asking.

SECURITY LOCKNUT CORPORATION
North Ave. and 15th Ave., Melrose Park, Ill.
Please send me without obligation:
☐ One of your Thread Tolerance Charts.
☐ We have a fastener problem and would like to know more about Security Locknuts.

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Town ..... Zone ..... State .....
Signed .....

Here's the Most Written on Using

Are You Interested in Cutting Production Costs?

Here at last is a complete reference library for the man who wants information on when, where and how to use the various production processes. Packed into these two volumes is a plain, practical, common sense explanation of the 54 major manufacturing methods that can be used in the production of all types of machine parts. Each chapter covers a different process and is arranged to show:

1. Methods and equipment used in the process
2. How to design to suit the process
3. Selection of suitable materials
4. Precision levels that can be maintained

These books give you the kind of on-the-job help you need in considering the use of various processes. They can be of use in any shop—large or small. Whether a job involves machining, stamping, forging, metal spraying—or any of the scores of other operations—these books tell you exactly what to consider in using a specific process. Here are the specific advantages and disadvantages of each method . . . and the design pitfalls to avoid. Here also are the key production factors to consider when using any process—plus valuable information on the most economic precision levels and minimum production levels. Now you can eliminate guesswork over the question of whether the material can be worked economically, or that tolerances and finishes you desire can be met. You can eliminate redesigning, additional expensive operations and high rejection costs.

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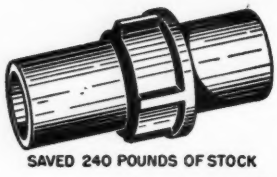

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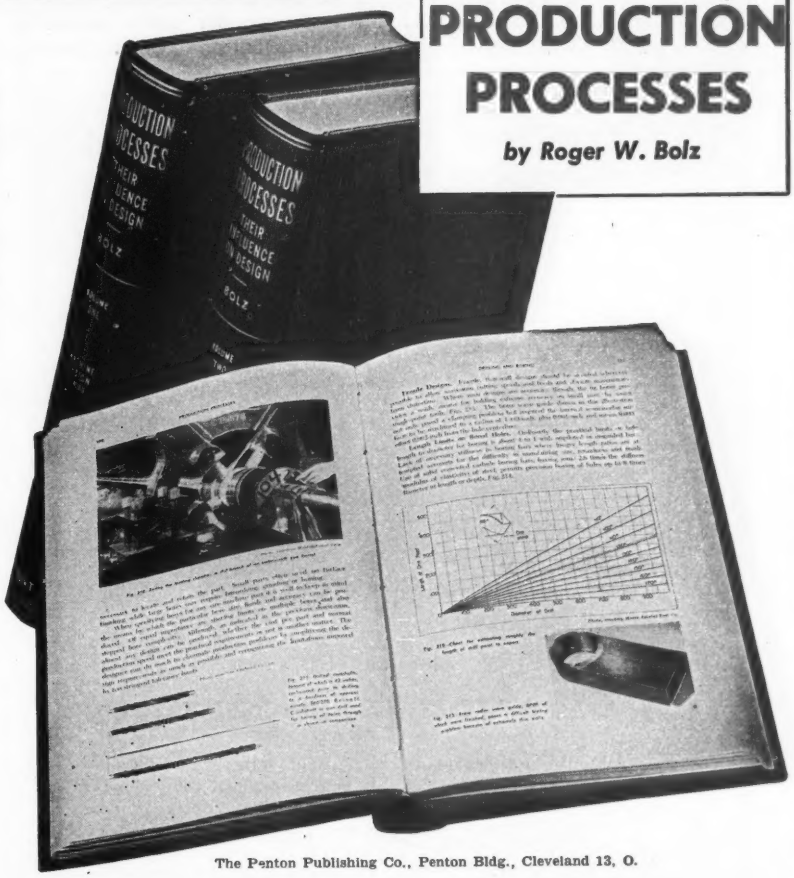

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in turn fires the stud. Unit's range of applications is enhanced by its ability to apply studs in otherwise inaccessible places. Simple construction of the holder provides a wide variety of stud sizes and shapes, including hooks and headed studs in sizes to ½-inch diameter.

Die Lift Tables Offered

USE REPLY CARD—CIRCLE No. 11

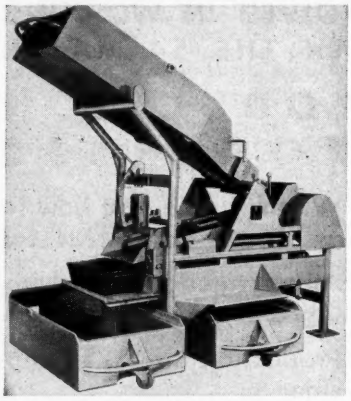
Union Tool Corp., Warsaw, Ind., offers a line of die lift tables made to meet a wide range of industrial applications. Models are built in standard table sizes from 30 x 36 to 44 x 84 inches with corresponding capacities from 4 to 10 tons. Standard elevations are 30 to 46 inches, mechanically operated. Air-operated or hydraulic units are also available.

Features of efficient operating mechanism include four-point support, magnetic reversing starter, transformer for 110-v operation and pushbutton control. Positive truck locks and protective skirts for full elevation are also applied. Variations from standard specifications are available for all types of special applications.

Unit Separates, Grades Chips

USE REPLY CARD—CIRCLE No. 12

Separator that removes parts from deburring and finishing chips and grades different chip sizes is offered by Grav-i-Flo Corp., Sturgis, Mich. Machine's design indicates three improvements. Greater compactness is attained by locating hopper at the top of machine and floor space is reduced to half the size occupied by previous models. Part separation is effected without danger to the parts. Two deck carriage permits grading three sizes of chips at one time.



. . . grades three chip sizes at one time

Inclined end of the screen carriage is motivated by an eccentric; lower end rests on ball bearing rollers. Simple cam turning action which raises the lower carriage end off its rollers converts the machine to chip grading. This creates the same eccentric action as is performed at the back of machine. Separator is powered by ¾-hp variable speed drive.

Hub Contact Wheel

USE REPLY CARD—CIRCLE No. 13

Universal hub contact wheel, developed by Carborundum Co., Niagara Falls, N. Y., consists of a three part bolted metal assembly that includes a flanged universal hub, a T-61 serrated rubber tire and a side plate. Unit will mount T-61 rubber tires from ¼ to 6 inches in width and from 5 to 105

Give you these features

Double-acting spring cushioned draw bar to minimize stopping and starting shock, positive trail at high speeds, maximum roadability on rough terrain, sturdy solid steel axle beam construction . . . these features combine to make CARAVAN units outstanding among axle assemblies.

In addition, CARAVAN axles are noted for versatility. They are suitable for use on all types of industrial, field-service, construction and military equipment . . . wherever dependable portability is needed.

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Write today for United's 12-page illustrated Catalog No. 101. In addition to specifications on the complete line of CARAVAN axles, it contains descriptions of automatic surge-control braking device, retractable third-wheel assembly and other CARAVAN accessories.

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*Ford Motor Company

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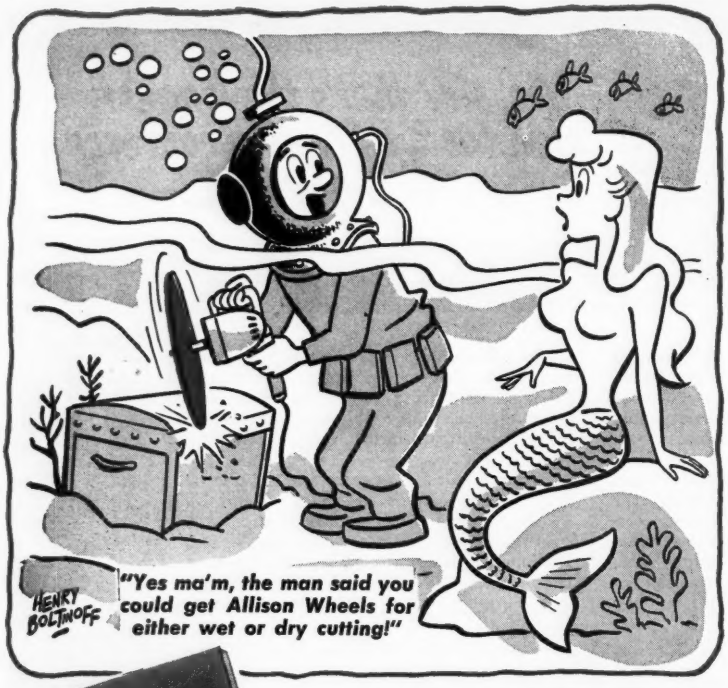

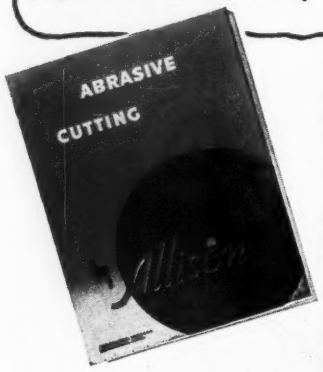

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durometer in hardness. This interchangeability permits each hub to take up to 144 different tires of varying width and/or durometer.

Sets of Master Balls

USE REPLY CARD—CIRCLE No. 14

Two sets of super precision master balls for use in setting comparator gages, as measuring standards and similar applications, are introduced by Industrial Tectonics Inc., Ann Arbor, Mich. Set No. 16 consists of 16 balls from 1/16 to 1-inch diameter in 1/16-inch increments. No. 32 consists of 31 balls from 1/16 to 1-inch diameter in 1/32-inch increments.

High Speed Dye Penetrant

USE REPLY CARD—CIRCLE No. 15

A high-speed dye penetrant inspection process is announced by Turco Products Inc., Los Angeles 1, Calif. Known as Chek-Spek, the nonflammable product is used in conjunction with a vapor degreaser. It is applicable to both ferrous and nonferrous metals.

Rubber-Phenolic Varnish

USE REPLY CARD—CIRCLE No. 16

Rubber phenolic varnish, 12359, has been formulated by General Electric's Chemical Division, Pittsfield, Mass., to tackle tough mechanical applications where high impact and flexibility and toughness are required. Gears, shuttles, tubing and caster wheels are examples of where it may be used.

Belt for Abrasive, Oily Material

USE REPLY CARD—CIRCLE No. 17

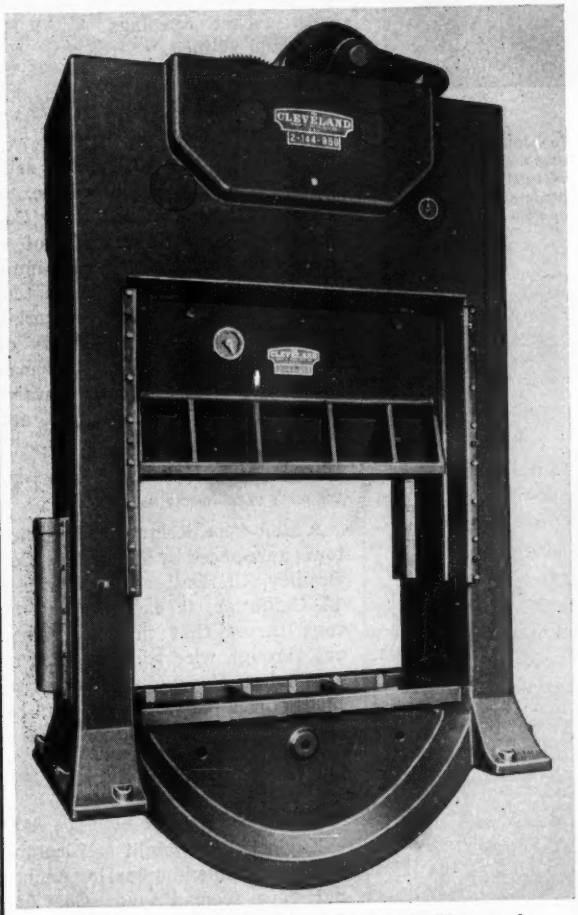
Abrasive and oily material can be conveyed easily with Armadillo Protecto-Coat oil buff conveyor belting offered by Main Belting Co., Philadelphia 47, Pa. The oil buff, stitched canvas belt has a hard, glass-like, flexible coating and is made in two duck weights, 37½ and 39 ounces.

Ball Bearing Spindles

USE REPLY CARD—CIRCLE No. 18

A series of interchangeable ball bearing spindles for Brown & Sharpe universal grinder has been developed by Whitnon Mfg. Co., New Britain, Conn. Spindle is inserted locating the steel sleeves in old bearing caps. Hand screws are

Proven DEPENDABLE



Cleveland 2-144-850 Two-Point Press is double geared, has twin drive. Its stroke is 36", adjustment 24", bed area 60" x 144", capacity 850 tons.

Press accuracy is never more important than when testing a new set of dies. Uneven slide pressure or deflection under load would result in inaccurate die-spotting.

E. Miller, president of Lansing Tool and Die Co., Lansing, Michigan says, "We have learned to depend completely on the results of a die try-out made on our Cleveland two-point press. Rugged construction of this press assures continuous accuracy. No major adjustments have been necessary in nearly two years of operation. Since we are constantly changing dies, we like the ready accessibility of the bed area. The Cleveland drum type clutch gives us easy, exact control of the slide at all times. We can 'inch' new dies down with positive precision. Performance has been so dependable that we are now installing another Cleveland."

If you are looking for outstanding press performance, for dependable accuracy, select a Cleveland. Wide selection of press type and size assures you of the exact press for greatest efficiency.

A-5000

New die completely forms automobile bumper in one operation. Photo courtesy of Lansing Tool & Die Company.

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Template shows sizes and shapes of laminations produced in this operation

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This Clearing press in the new multi-million dollar "dream plant" of Lincoln Electric Company at Cleveland is producing laminations at 150 strokes per minute, with automatic feed and scrap cutting. Perhaps no manufacturer is better known than Lincoln Electric for its unremitting attention to costs, coupled with a famed incentive system that gives its workers an average yearly wage exceeding $7,000. Only the most efficient equipment can win a place in such a plant. It's no coincidence that Clearing presses are commonly found in plants that are setting new standards for industry. Clearing presses have been setting new standards on their own—new conceptions of speed, of accuracy, of die life. It will pay you to check with Clearing engineers for a forward-looking answer to your press problems.

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then pulled down with no danger of over tightening. Bearings are permanently grease lubricated with grit and water sealed out.

Magnetic Driving Devices

USE REPLY CARD—CIRCLE No. 19

J. H. Williams & Co., Buffalo 7, N. Y., introduces a magnetic adapter and hexagon-square shank for use with its impact Supersockets to drive hex head hardened and self-tapping screws. Devices are available for ¼-inch drive size tools with socket openings ¼, 9/32, 5/16 and ⅜-inch.

Identification Device

USE REPLY CARD—CIRCLE No. 20

Metal Cal, a permanent, self-adhesive identification device, is available from C & H Supply Co., Seattle, Wash. Consisting of a 0.003-inch thickness of aluminum foil, it is backed with a high tensile strength bonding material. Metal-Cals require no rivets or other fastening devices and may be applied to any smooth cohesive surface such as metal, glass, etc.

Wire Rope Cutter

USE REPLY CARD—CIRCLE No. 21

A latch-type design wire rope cutter is announced by Manco Mfg. Co., Bradley, Ill. Designated as series 15 Guillotine, it exerts up to 50 tons thrust that makes a clean cut through wire rope as thick as 1¾-inches. Heavy-duty shear type blades can be removed for resharpening.

Floating Anchor Nut

USE REPLY CARD—CIRCLE No. 22

Kaylock lightweight self-locking nut is available in a floating anchor nut type from Kaynar Co., Los Angeles, Calif. It consists of an assembly of two parts, a threaded nut portion and a retaining sheet, which provides a 1/16-inch radial

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INFORMATION

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71. Metal Quality

Published by Drop Forging Association for forging engineers, metallurgists and production executives, 60-page booklet "Metal Quality" describes and illustrates development of metal quality progressively through hot working operations. Forging quality steel and proper selection of metals are discussed, and steps in making forging dies as well as methods and equipment used in hot working steel by forging are reviewed.

72. Plating Barrel

Belke Mfg. Co.—New catalog describes plating barrels of all types and sizes along with auxiliary equipment and accessories. Modern layout for low cost plating production is covered as well.

73. Worm Gear Speed Reducers

Cleveland Worm & Gear Co.—In the 180 illustrated pages of general catalog No. 400 you will find descriptions of each model in line of Cleveland worm gear speed reducers, as well as worm and gear sets for built-in power transmission requirements. Engineering and application data on each unit, including dimensions, weights and rating tables, can be found.

74. Resistance Welding

Weiger-Weed & Co.—Nearly 700 different styles and sizes of resistance welding electrodes are listed in 32-page illustrated catalog 14.650-3. Recent additions to line covered are Kaptrode electrodes which conserve copper, cold-formed offset electrodes, irregular and gun welder tips. Also described are holders, forgings, castings, alloy rod and bar stock.

75. Perforated Metals

Diamond Mfg. Co.—Designs, patterns and tabulated dimensional sizes of perforated metals and perforated metal products are found in 24-page catalog No. 35. Used in form of standard perforated sheets or as finished fabricated parts, perforated metals have thousands of uses as screens, ventilators, strainers, retainers for filters, reinforcement or spacers.

76. Metal Abrasives

Cleveland Metal Abrasive Co. — "20th Century, The Persuasive Abrasive" is title of 8-page illustrated catalog No. 152 which explains uses, advantages and proper selection of company's line of shot, grit and iron powder abrasive materials.

77. Antiscoring Lubricants

Chicago Mfg. & Distributing Co.—Lathe centers, steady rests, thrust bearings, broaching tools, die set posts, cams, machine ways and taps are but a few of the items that can be lubricated with CMD Anti-Scoring lubricant. 4-page illustrated bulletin "For High Production" explains lubricant applications and also describes line of helical groove centers.

78. Fasteners in Stock

Camcar Screw & Mfg. Corp.—Complete listings of aircraft and standard screws and fasteners are contained in two 24 and 52-page "Fastener Stock Lists." Latter covers specials, Phillips head screws, machine and sheet metal screws, indented hex head screws and other fasteners in steel, brass and stainless steel.

79. Hydraulic Pump-Motor

Denison Engineering Co.—Hydraulically balanced vanes and interchangeable cam rings are incorporated in 2000-psi, single-stage Hydroilic pump/motor described in 8-page bulletin P-5. As a pump, four sizes for 16 different displacements deliver up to 70 gpm. As a motor, 11 capacities in four sizes have stalled torque ratings of 13 to 257 lb-in. per 100 psi.

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80. Surface Peening Process

Cogsdill Twist Drill Co.—How the Bearing-izing process can condense grain structure, burnish surface and increase wear life, render parts more resistant to corrosion and improve lubrication conditions is detailed in 4-page illustrated folder. Process produces Ultra-Surface by delivering 200,000 blows per minute to attain above results. Examples of treated parts are shown.

81. Lubricant

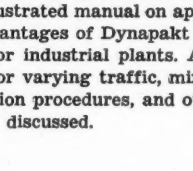
Fiske Brothers Refining Co.—56-page illustrated "Lubriplate Data Book" deals with control of friction, Lubriplate lubricants of oil and grease types, principal uses of various grades and recommended applications in specific equipment.

82. Speed Reducers

De Laval Steam Turbine Co.—48-page illustrated bulletin G-WWH describes complete line of double-worm and helical-worm gear speed reducers. Data is included on horsepower, output torque and center distances for reductions up to 6400:1. Information on how to select double-reduction gearing, rating tables, dimensions sheets and other data are included.

83. Factory Floors

Flash-Stone Co.—"Traffic Concrete —A Study in Specialization" is 20-page illustrated manual on application and advantages of Dynapakt concrete floors for industrial plants. Available mixes for varying traffic, mixing and application procedures, and other factors are discussed.



84. D-C Motor-Generators

Electric Products Co.—14-page illustrated bulletin 20-210 deals with complete line of low-voltage direct-current motor-generators for electrolytic purposes. This equipment is designed for anodizing, electroplating, chemical treating, metals refining and other similar applications.

85. Press Brakes

Cincinnati Shaper Co.—16-page illustrated bulletin B-3 contains general information on Cincinnati press brake design, rigidity and other construction and mechanical features. Data and dimension sheets are included for standard brake sizes. Filler block data and a special feature section describing specific machine features are included.

86. Planer Control

Electric Controller & Mfg. Co.—Safer stopping and automatic reversal by new impedance-electronic limit switches are features of reversing control for planers that is described in 8-page illustrated booklet 927.

EDITORIAL REPRINTS:

87. Machine Tools

Creation of tough alloy components for jet engines puts the spotight on need for more powerful machine tools to meet increasing production demands. In STEEL reprint "Jet Alloys Toss Challenge to Machine Tools" authors P. G. DeHuff and D. C. Goldberg review factors involved in these tool problems and discuss such facets as design trends, tolerance problems, carbide tools, greater machine size and capacity, coolants and prospects in titanium.

88. Arc Welding

In STEEL reprint "Transmission Assemblies Arc-Welded Automatically" H. Chase reports how flywheels for Fordomatic transmissions are built using submerged arc welding methods. Dual setup which joins hub-like pilot to flywheel and machines which make ten arc welds to fasten ring gear using an indexing arrangement are described.

89. Powdered Metals

STEEL's Assistant Editor, Sam Baker points to some current applications and future possibilities in powder metallurgy in reprint "Powdered Metals: Old Art, New Science." He describes the process as a developing science that can help you, especially for producing small, intricate parts.

90. Chrome Stainless

"Chrome Stainless: Easing the Pinch" it title of STEEL reprint which presents discussion of certain high and low chromium steels which possess good mechanical properties, high fabricability and are excellent replacements in stainless applications formerly requiring nickel. Tables show effects of temperature on properties, chemical composition, mechanical and physical properties.

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movement between nut and anchoring portion. The float facilitates alignment of nut and bolt in subsequent assembly.

Miniature Power Type Resistors

USE REPLY CARD—CIRCLE No. 23

Designated as Axiohm, miniature power type resistors with axial leads are introduced by Ward Leonard Electric Co., Mt. Vernon, N. Y. They are for use where space saving is a necessity and require no lugs, bolts or brackets for mounting. Units are available in 5 and 10 w sizes.

Flux for Soldering Work

USE REPLY CARD—CIRCLE No. 24

Lonco activated rosin flux, developed by London Chemical Co., Chicago 16, Ill., is recommended for soldering work on copper, brass, bronze and nickel or any alloy of these metals. It is noncorrosive, nontoxic and quick acting on materials that have been oxidized or carbonized in storage.

Lubricates, Cools Cutting Tools

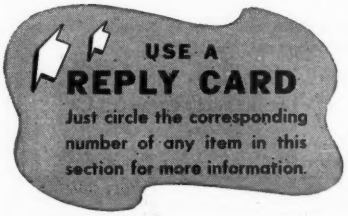
USE REPLY CARD—CIRCLE No. 25

Atom-Lube, an atomized lubricating and coolant system for cutting tools, is announced by Henry G. Thompson & Son Co., New Haven, Conn. It can be operated by industrial air pressure lines or small air compressors. A flexible nozzle permits vapor spray to hit edge of cutting tool at most effective angle.

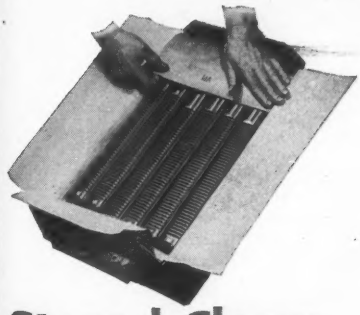
Reflex Sight Gage

USE REPLY CARD—CIRCLE No. 26

Rucker Mfg. Co., Oakland 8, Calif., has designed a reflex sight gage for use on equipment where it is desirable to observe liquid level or internal activity of tanks, vats or vessels. It is made with a cast iron housing, fluted pyrex-type sight glass and asbestos gaskets. It is designed for temperatures to 500° F.



Vapor FROM Paper STOPS RUST



Stored Clean to Stay Clean

Here's one of a dozen or more ways you can use VPI to store parts without the bother and cost of slushing or dipping with oil.

The beauty of it is, you have no "cleaning" to do. Parts in-process or parts for inventory are *stored* clean. They *stay* clean and rust-free—always ready for instant use.

VPI gives off a vapor. It robs air and moisture of all corrosive action.

VPI Wrap may be used as a liner for tote pans (see above), drawers or boxes, as a package insert or in envelope form.

Reports of savings from VPI users are so revealing that typical examples have been compiled for you. Send today for your copy.

Angier VPI* WRAP

Angier

Distributors in All Principal Cities

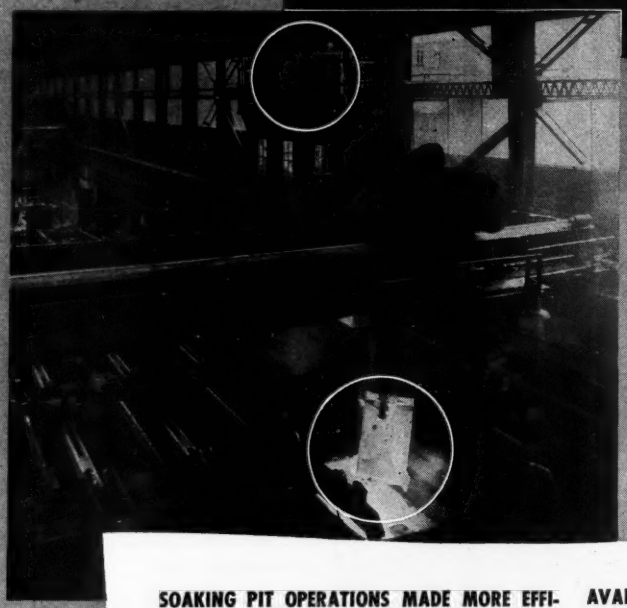
Angier Corporation, Framingham 8, Mass.
Send "VPI Facts" as applied to:

☐ Machinery-Industrial, Metal Working, Farm, Office, Construction.
☐ Electrical Machinery, Appliances, Products.
☐ Transportion Equipment — Auto, Aircraft, Naval, Railroad, etc.
☐ Fabricated Products — Cutlery, Hardware, etc.
☐ Steel in process of fabrication.
☐ Ordnance Equipment.
☐ Instruments and clocks.
☐ Other.

Sign below; attach to your letterhead

* ® Vapor Rust Preventive

J&L STEEL uses DRAVO crane cab coolers in its hottest spot



SOAKING PIT OPERATIONS MADE MORE EFFICIENT, WORKING CONDITIONS BETTER . . . The hottest spot in any steel mill crane operation is over the soaking pit. Temperatures range as high as 170° F.; dirt, dust, fumes and gases limit the time any man can work his crane over this installation.

Jones & Laughlin Steel Corporation has eliminated this working hazard by installing Dravo Crane Cab Coolers on the cranes working over these hot spots.

CRANE CAB COOLERS HAVE LONG SERVICE LIFE, PROVIDE YEAR-'ROUND AIR CONDITIONING . . . Dravo Crane Cab Coolers are ruggedly constructed, factory assembled and pre-tested to provide years of more-than-satisfactory service. All equipment in the unit is readily accessible with ample space for quick and efficient maintenance.

In the various air conditioning functions the crane cab cooler not only filters the air, removes dust, dirt and fumes, but heats the cab in winter, cools it in summer and provides constant ventilation the year around.

AVAILABLE IN SINGLE UNIT OR IN SPLIT-TYPE UNIT; IMMEDIATE DELIVERY . . . Dravo Crane Cab Coolers are built in two models—the self-contained unit, mounted on any available space on the crane; and the new split-type unit where the condenser section is mounted on the crane and the conditioning section in the cab.

The Dravo Crane Cab Cooler can be easily and quickly installed on any type of crane with a minimum of down-time required. Units are available now! Write to Dravo for more information—or phone the nearest Dravo office and have our representative call on you.

DRAVO

DRAVO
CORPORATION

606 Dravo Building, Fifth and Liberty Avenues
Pittsburgh 22, Pa.

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The Market Outlook

THE NEXT TIME you have trouble getting steel as quickly as you want it, remember the steel strikes.

Work stoppages in the last month by the steelworkers have lost us approximately 2,360,000 net tons of raw steel. That's eight days' output at the rate of production prevailing just before the work interruptions. The industry had been operating at 102 per cent of capacity, and with the alltime high capacity the industry has today, the loss of each day's production is greater than it ever was.

IT'S THIS BIG—One way to comprehend the enormity of the loss thus far is to realize that 1 million automobiles could have been built from the steel production lost. At the current rate of output, that would have been enough steel for two months in the auto industry, the largest consumer of steel.

Operations in the steel industry had been resumed sufficiently last week to bring the rate of ingot output up to 83 per cent of capacity. In the preceding week the strike cut output to 53 per cent.

TROUBLES—Restoration of operations was not without difficulty. In the big producing district of Pittsburgh, resumption was impeded by equipment damage caused by the steelworkers in their eagerness to walk out during the latest work stoppage. Many employees left furnaces and other equipment untended in their haste to strike. The oil workers' strike thrust some obstacles into the resumption of steelmaking operations. In some cases, tar from coke ovens was being substituted for oil as a fuel for open hearths.

SURPRISE—Work interruptions in the steel industry will delay steel shipments over the next few months, for the regular price mills are booked full on most products for the second quarter and as far into the third quarter as they want to take orders for. Sustainment of demand sufficient to fill third-quarter order books is a surprise to many steel company sales executives. They had thought there would not be enough demand to keep ingot production up to capacity levels after the second quarter. Crowding into the third quarter too will be a carryover of orders that could not be filled in the second quarter because of the work stoppages.

HARD TO GET—In most stringent supply of all steel products are the larger size hot-rolled and cold-finished carbon bars. Much of the demand for them stems from the needs of the defense program. Producers of hot carbon bars are turning away tonnage for the third quarter. Cold-finishers not only are confronted with more orders than they can handle but they can't get enough hot stock to utilize their facilities fully.

Product next in tight supply is heavy and wide plate. Nonpremium price producers of this product are turning away orders for third quarter.

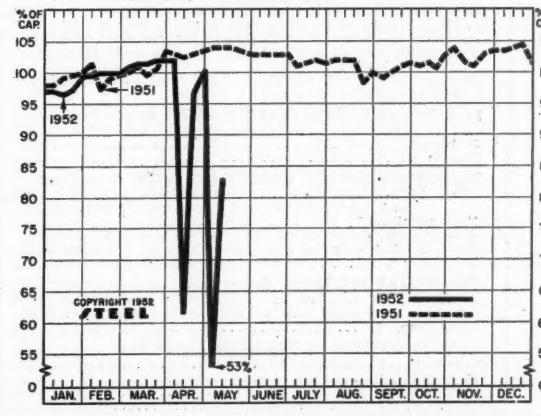
FLURRY PAST?—Hot-rolled and cold-rolled carbon steel sheets, while in good demand, are not as hard to get as bars and heavy plate. The recent flurry in the automobile industry's demand for cold-rolled carbon sheets is believed to have passed its crest. Demand from the appliance industry for cold-rolled sheets remains dull and there are further order cancellations from these consumers. Nevertheless, the regular price producers of sheet are booked through the third quarter or for as much of that period as they wish to commit.

Drop in appliance production and the resultant decline in demand for small electric motors has cut the demand for the motor grades of silicon sheet and strip. Silicon grades for large motors and big transformers continue in good demand.

TOP PROBLEM—Unbalance of inventories continues to be the top problem with most steel warehouses, and the work stoppages in the steel industry delay the day of balance.

Pressure for open-hearth grades of scrap continues to ease as mill inventories rise. Some steel producers are suspending shipments on No. 2 heavy melting scrap and No. 2 bundles. On the West Coast No. 2 bundles are being sold for May delivery at $5 under ceiling price.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended May 10	Change	Same Week 1951	Same Week 1950
Pittsburgh	64	+20*	101	100.5
Chicago	83	+33*	109	104
Mid-Atlantic	86	+16	101	97
Youngstown	70	+25	106	107
Wheeling	91	+14*	98.5	104
Cleveland	80.5	+36.5*	101	95.5
Buffalo	104	+69	104	104
Birmingham	50	+ 6	100	100
New England	55	+20	98	87
Cincinnati	90	+30	105	106
St. Louis	78	+33.5*	86.5	80
Detroit	82.5	+18*	106	102
Western	92.5	+10*	104	95.5
Estimated national rate	83	+30	104	100.5

Based on weekly steelmaking capacity of 2,077,040 tons in 1952; 1,999,034 tons for 1951; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950.

*Change from revised rate for preceding week.

The Metalworking Outlook—p. 51 *Production-Engineering News—p. 87*

Composite Market Averages

FINISHED STEEL INDEX, Weighted:

	May 8 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100) ..	171.92†	171.92†	171.92†	171.92	118.67
Index in cents per lb.	4.657†	4.657†	4.657†	4.657	3.215

ARITHMETICAL PRICE COMPOSITES:

Finished Steel, NT	$106.32†	$106.32†	$106.32†	$106.32	$60.82
No. 2 Fdry, Pig Iron, GT..	52.54	52.54	52.54	52.54	32.99
Basic Pig Iron, GT	52.16	52.16	52.16	52.16	32.49
Malleable Pig Iron, GT ...	53.27	53.27	53.27	53.27	33.71
Steelmaking Scrap, GT	43.00	43.00	43.00	44.00	29.42

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39: Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

† Primary, pending 1952 tin plate contract price announcement.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	May 8 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh.....	3.70	3.70	3.70	3.70	2.60
Bars, H.R., Chicago	3.70	3.70	3.70	3.70	2.60
Bars, H.R., del. Philadelphia	4.252	4.223	4.223	4.20	2.98
Bars, C.F., Pittsburgh.....	4.55	4.55	4.55	4.55	3.20
Shapes, Std., Pittsburgh...	3.65	3.65	3.65	3.65	2.50
Shapes, Std., Chicago	3.65	3.65	3.65	3.65	2.50
Shapes, del. Philadelphia...	3.93	3.918	3.918	3.91	2.64
Plates, Pittsburgh	3.70	3.70	3.70	3.70	2.65
Plates, Chicago	3.70	3.70	3.70	3.70	2.65
Plates, Coatesville, Pa.	4.15	4.15	4.15	4.15	2.80
Plates, Sparrows Point, Md.	3.70	3.70	3.70	3.70	2.65
Plates, Claymont, Del.	4.15	4.15	4.15	4.15	2.80
Sheets, H.R., Pittsburgh...	3.60–75	3.60–75	3.60–75	3.60–75	2.50
Sheets, H.R., Chicago	3.60	3.60	3.60	3.60	2.50
Sheets, C.R., Pittsburgh...	4.35	4.35	4.35	4.35	3.20
Sheets, C.R., Chicago	4.35	4.35	4.35	4.35	3.20
Sheets, C.R., Detroit	4.55	4.55	4.55	4.55	3.35
Sheets, Galv., Pittsburgh...	4.80	4.80	4.80	4.80	3.55
Strip, H.R., Pittsburgh....	3.75-4.00	3.75-4.00	3.75-4.00	3.75-4.00	2.50
Strip, H.R., Chicago	3.50	3.50	3.50	3.50	2.50
Strip, C.R., Pittsburgh.....	4.65-5.35	4.65-5.35	4.65-5.35	4.65-5.35	3.20
Strip, C.R., Chicago	4.90	4.90	4.90	4.90	3.30
Strip, C.R., Detroit	4.85-5.60	4.85-5.60	4.85-5.60	4.35-5.60	3.35
Wire, Basic, Pittsburgh ...	4.85-5.10	4.85-5.10	4.85-5.10	4.85-5.10	3.425
Nails, Wire, Pittsburgh ...	5.90-6.20	5.90-6.20	5.90-6.20	5.90-6.20	4.125
Tin plate box, Pittsburgh..	$8.70	$8.70	$8.70	$8.70	$5.75

SEMIFINISHED

Billets, forging, Pitts. (NT)	$66.00	$66.00	$66.00	$66.00	$50.00
Wire rods, ½-⅝", Pitts. ..	4.10–30	4.10–30	4.10–30	4.10–30	2.55

PIG IRON, Gross Ton

Bessemer, Pitts.	$53.00	$53.00	$53.00	$53.00	$34.00
Basic, Valley	52.00	52.00	52.00	52.00	33.00
Basic, del. Phila.	56.75	56.61	56.61	56.49	35.52
No. 2 Fdry, Pitts.	52.50	52.50	52.50	52.50	33.50
No. 2 Fdry, Chicago	52.50	52.50	52.50	52.50	33.00
No. 2 Fdry, Valley	52.50	52.50	52.50	52.50	33.50
No. 2 Fdry, del. Phila. ...	57.25	57.11	57.11	56.99	36.02
No. 2 Fdry, Birm.	48.88	48.88	48.88	48.88	29.88
No. 2 Fdry (Birm.) del. Cin.	55.49	55.49	55.49	55.33	34.75
Malleable, Valley	52.50	52.50	52.50	52.50	33.50
Malleable, Chicago	52.50	52.50	52.50	52.50	33.50
Charcoal, Lyles, Tenn.	66.00	66.00	66.00	66.00	40.50
Ferromanganese, Etna, Pa.	188.00	188.00	188.00	188.00	140.25*

* F.o.b. cars, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts...	$44.00	$44.00	$44.00	$45.00	$30.00
No. 1 Heavy Melt, E. Pa...	42.50	42.50	42.50	43.50	29.50
No 1 Heavy Melt, Chicago.	42.50	42.50	42.50	43.50	28.25
No. 1 Heavy Melt, Valley..	44.00	44.00	44.00	45.00	30.75
No. 1 Heavy Melt, Cleve...	43.00	43.00	43.00	44.00	30.75
No. 1 Heavy Melt, Buffalo.	43.00	43.00	43.00	44.00	32.00
Rails, Rerolling, Chicago ..	52.50	52.50	52.50	52.50	33.00
No. 1 Cast, Chicago	49.00*	49.00*	49.00*	49.00*	37.50

* F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connisvl. ..	$14.75	$14.75	$14.75	$14.75	$8.75–9.50
Beehive, Fdry, Connisvl. ..	17.50	17.50	17.50	17.50	9.75–11.00
Oven Fdry, Chicago	23.00	23.00	23.00	21.00	15.10

NONFERROUS METALS

Copper, del. Conn.	24.50	24.50	24.50	24.50	21.50
Zinc, E. St. Louis	19.50	19.50	19.50	17.50	10.50
Lead, St. Louis	16.80	17.80	18.80	16.80	14.80-14.85
Tin, New York	121.50	121.50	121.50	139.00	80.00
Aluminum, del.	19.00	19.00	19.00	19.00	15.00
Antimony, Laredo, Tex. ..	44.00	44.00	50.00	42.00	33.00
Nickel, refinery, duty paid.	56.50	56.50	56.50	50.50	35.00

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$54.00	$54.50	$55.00	$55.50
NewYork, del.	....	58.28	58.78	....
Newark, del.	57.02	57.52	58.02	58.52
Philadelphia, del.	56.75	57.25	57.75	58.25
Birmingham District				
Alabama City, Ala. R2	48.38	48.88	....	....
Birmingham R2	48.38	48.88	....	....
Birmingham S9	48.38	48.88	....	....
Woodward, Ala. W15	48.38	48.88	....	....
Cincinnati, del.	....	55.49	....	....
Buffalo District				
Buffalo R2	52.00	52.50	53.00	....
Buffalo H1	52.00	52.50	53.00	....
Tonawanda, N.Y. W12	52.00	52.50	53.00	....
No. Tonawanda, N.Y. T9	....	52.50	53.00	....
Boston, del.	62.11	62.61	63.11	....
Rochester, N.Y., del.	54.88	55.38	55.88	....
Syracuse, N.Y., del.	55.91	56.41	56.91	....
Chicago District				
Chicago I-3	52.00	52.50	52.50	53.00
Gary, Ind. U5	52.00	....	52.50	....
IndianaHarbor, Ind. I-2	52.00	....	52.50	....
So. Chicago, Ill. W14	52.00	52.50	52.50	....
So. Chicago, Ill. Y1	52.00	52.50	52.50	....
So. Chicago, Ill. U5	52.00	....	52.50	53.00
Milwaukee, del.	54.06	54.56	54.56	55.06
Muskegon, Mich., del.	....	58.47	58.47	....
Cleveland District				
Cleveland A7	52.00	52.50	52.50	53.00
Cleveland R2	52.00	52.50	52.50	....
Akron, O., del. from Cleve.	54.61	55.11	55.11	55.61
Lorain, O. N3	52.00	....	....	53.00
Duluth I-3	....	....	52.50	....
Erie, Pa. I-3	52.00	52.50	52.50	53.00
Everett, Mass. E1	....	59.75	60.25	....
Fontana, Calif. K1	58.00	58.50	....	....
Seattle, Tacoma, Wash., del.	....	60.66	....	....
Portland, Oreg., del.	....	60.66	....	....
LosAngeles, SanFrancisco, del. ...	60.16	60.66	....	....
GraniteCity, Ill. G4	53.90	54.40	54.90	....
St. Louis, del. (inc. tax).....	54.66	55.16	55.66	....
Ironton, Utah C11	52.00	52.50	....	....
Geneva, Utah C11	52.00	52.50	....	....
LoneStar, Tex. L6	48.00	*48.50	48.50	....
Minnequa, Colo. C10	54.00	55.00	55.00	....
Pittsburgh District				
NevilleIsland, Pa. P6	....	52.50	52.50	53.00
Pitts., N.&S. sides, Ambridge, Aliquippa, del.	....	53.80	53.80	54.30
McKeesRocks, del.	....	53.54	53.54	54.04
Lawrenceville, Homestead, McKeesport, Monaca, del.	....	54.07	54.07	54.57
Verona, del.	....	54.57	54.57	55.07
Brackenridge, del.	....	54.82	54.82	55.32
Bessemer, Pa. U5	52.00	....	52.50	53.00
Clairton, Rankin, So. Duquesne, Pa. U5	52.00	....	....	....
McKeesport, Pa. N3	52.00	....	....	53.00
Monessen, Pa. P7	54.00	....	....	....
Sharpsville, Pa. S6	....	....	52.50	53.00
Steelton, Pa. B2	54.00	54.50	55.00	55.50
Swedeland, Pa. A3	56.00	56.50	57.00	57.50
Toledo, O. I-3	52.00	52.50	52.50	53.00
Cincinnati, del.	57.47	57.97	....	....
Troy, N.Y. R2	54.00	54.50	55.00	55.50
Youngstown District				
Hubbard, O. Y1	52.00	52.50	52.50	....
Youngstown Y1	52.00	52.50	52.50	....
Youngstown U5	52.00	....	....	53.00
Mansfield, O., del.	56.65	57.15	57.15	57.65

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50c manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson, O. G2, J1	$62.50
Buffalo H1	63.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for each 0.045% max. P)

NiagaraFalls, N.Y. P15	$88.00
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2	92.50
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2.	95.50
Wenatchee, Wash., O.H. & Fdry., frt. allowed K2.....	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3	$66.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$57.00
Steelton, Pa. B2	60.00
Philadelphia delivered	63.55
Troy, N.Y. R2	60.00

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Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, May 8, 1952; cents per pound except as otherwise noted. Changes shown in Italics.
Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$79.00
Munhall,Pa. U5 .....52.00

INGOTS, Alloy (NT)
Detroit R7 .....$54.00
Fontana,Calif. K1 ....80.00
Houston S5 .....62.00
Midland,Pa. C18 .....54.00
Munhall,Pa. U5 .....54.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$56.00
Clairton,Pa. U5 .....56.00
Ensley,Ala. T2 .....56.00
Fairfield,Ala. T2 .....56.00
Fontana,Calif. K1 ....75.00
Gary,Ind. U5 .....56.00
Johnstown,Pa. B2 .....56.00
Lackawanna,N.Y. B2 ..56.00
Munhall,Pa. U5 .....56.00
So.Chicago,Ill. U5 ....56.00
So.Duquesne,Pa. U5 ...56.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$66.00
Buffalo R2 .....66.00
Canton,O. R2 .....66.00
Clairton,Pa. U5 .....66.00
Cleveland R2 .....66.00
Conshohocken,Pa. A3..73.00
Detroit R7 .....69.00
Ensley,Ala. T2 .....66.00
Fairfield,Ala. T2 .....66.00
Fontana,Calif. K1 ....85.00
Gary,Ind. U5 .....66.00
Geneva,Utah C11 .....66.00
Houston S5 .....74.00
Johnstown,Pa. B2 .....66.00
Lackawanna,N.Y. B2..66.00
LosAngeles B3 .....85.00
Munhall,Pa. U5 .....66.00
Seattle B3 .....85.00
So.Chicago R2,U5,W14..66.00
So.Duquesne,Pa. U5 ..66.00
So.SanFrancisco B3 ...85.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$70.00
Buffalo R2 .....70.00
Canton,O. R2 .....70.00
Canton,O.(29) T7 ....66.00
Conshohocken,Pa. A3 ..77.00
Detroit R7 .....73.00
Fontana,Calif. K1 ....89.00
Gary,Ind. U5 .....70.00
Houston S5 .....78.00
Ind.Harbor,Ind. Y1 ...70.00
Johnstown,Pa. B2 ....70.00
Lackawanna,N.Y. B2 ..70.00
LosAngeles B3 .....90.00
Massillon,O. R2 .....70.00
Midland,Pa. C18 .....70.00
Munhall,Pa. U5 .....70.00
So.Chicago R2,U5,W14..70.00
So.Duquesne,Pa. U5 ..70.00
Struthers,O. Y1 .....70.00
Warren,O. C17 .....70.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 .....$82.00
Cleveland R2 .....82.00
Fontana,Calif. K1 ...103.00
Gary,Ind. U5 .....82.00
Massillon,O. R2 .....82.00
So.Chicago, Ill. R2 ...82.00
So.Duquesne,Pa. U5 ..82.00

SHEET BARS (NT)
Fontana,Calif. K1 ...$89.00

SKELP
Aliquippa,Pa. J5 ....$3.45
Munhall,Pa. U5 .....3.35
Warren,O. R2 .....3.35
Youngstown R2, U5 ...3.35

WIRE RODS
Alton,Ill. L1 .....4.40
AlabamaCity,Ala. R2 ..4.10
Buffalo W12 .....4.10
Cleveland A7 .....4.10
Donora,Pa. A7 .....4.10
Fairfield,Ala. T2 .....4.10
Fontana,Calif. K1 ....4.90
Houston S5 .....4.50
Johnstown,Pa. B2 .....4.10
Joliet,Ill. A7 .....4.10
LosAngeles B3 .....4.90
Minnequa,Colo. C10 ....4.35
Monessen,Pa. P7 .....4.30
No.Tonawanda,N.Y. B11..4.10
Pittsburg,Calif. C11 ....4.75
Portsmouth,O. P12 ....4.30
Roebling,N.J. R5 .....4.20
So.Chicago,Ill. R2 .....4.10
SparrowsPoint,Md. B2 ..4.20
Sterling,Ill.(1) N15 ....4.10
Struthers,O. Y1 .....4.10
Torrance,Calif. C11 ....4.90
Worcester,Mass. A7 ....4.40

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ....4.45
Lackawanna,N.Y. B2 ..4.45
Munhall,Pa. U5 .....4.45
So.Chicago,Ill. U5 .....4.45

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.60
Aliquippa,Pa. J5 .....3.65
Bessemer,Ala. T2 .....3.65
Bethlehem,Pa. B2 .....3.70
Clairton,Pa. U5 .....3.65
Fairfield,Ala. T2 .....3.65
Fontana,Calif. K1 ....4.25
Gary,Ind. U5 .....3.65
Geneva,Utah C11 .....3.65
Houston, S5 .....4.05
Ind.Harbor,Ind. I-2 ....3.65
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 .....4.25
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.25
Minnequa,Colo. C10 ....4.10
Munhall,Pa. U5 .....3.65
Niles,Calif.(22) P1 ....4.85
Phoenixville,Pa. P4 ....5.90
Portland,Oreg. O4 .....4.50
Seattle B3 .....4.30
So.Chicago,Ill. U5 W14..3.65
So.SanFrancisco B3 ....4.20
Torrance,Calif. C11 ....4.25
Weirton,W.Va. W6 .....3.90

Alloy Stand. Shapes
Clairton,Pa. U5 .....4.35
Fontana,Calif. K1 .....5.55
Munhall,Pa. U5 .....4.35
So.Chicago,Ill. U5 .....4.35

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.50
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa.(14) B2 ..5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 .....6.10
Gary,Ind. U5 .....5.50
Geneva,Utah C11 .....5.50
Ind.Harbor,Ind. I-2 ....5.50
Ind.Harbor,Ind. Y1 .....6.00
Johnstown,Pa. B2 .....5.50
Lackawanna,N.Y.(14)B2 5.50
LosAngeles B3 .....6.05
Munhall,Pa. U5 .....5.50
Seattle B3 .....6.10
So.Chicago,Ill. U5 .....5.50
So.SanFrancisco B3 ....6.00
Struthers,O. Y1 .....6.00

Wide Flange
Bethlehem,Pa. B2 .....3.70
Clairton,Pa. U5 .....3.65
Fontana,Calif. K1 .....4.65
Lackawanna,N.Y. B2 ..3.70
Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

H.S., LA. Wide Flange
Aliquippa,Pa. J5 .....5.50
Lackawanna,N.Y. B2 ..5.50
Munhall,Pa. U5 .....5.45
So.Chicago,Ill. U5 .....5.45

BEARING PILES
Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.65
Bessemer,Ala. T2 .....5.65
Clairton,Pa. U5 .....5.65
Cleveland J5, R2 .....5.65
Conshohocken,Pa. A3 ..5.90
Fairfield,Ala. T2 .....5.65
Fontana,Calif.(30) K1 ..6.25
Gary,Ind. U5 .....5.65
Geneva,Utah C11 .....5.65
Ind.Harbor,Ind. I-2 ....5.65
Ind.Harbor,Ind. Y1 .....6.15
Johnstown,Pa. B2 .....5.65
Munhall,Pa. U5 .....5.65
Pittsburgh J5 .....5.65
Seattle B3 .....6.55
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.65
SparrowsPoint,Md. B2 ..5.65
Warren,O. R2 .....5.65
Youngstown Y1 .....6.15

PLATES, Open-Hearth Alloy
Claymont,Del. C22 .....4.85
Coatesville,Pa. L7 .....5.25
Conshohocken,Pa. A3 ..5.05
Fontana,Calif. K1 .....5.70
Gary,Ind. U5 .....4.75
Johnstown,Pa. B2 .....4.75
Munhall,Pa. U5 .....4.75
Sharon,Pa. S3 .....5.20
So.Chicago,Ill. U5 .....4.75
SparrowsPoint,Md. B2 ..4.75

FLOOR PLATES
Cleveland J5 .....4.75
Conshohocken,Pa. A3 ...4.75
Ind.Harbor,Ind. I-2 ....4.75
Munhall,Pa. U5 .....4.75
So.Chicago,Ill. U5 .....4.75

PLATES, Ingot Iron
Ashland,c.l. (15) A10 ..3.95
Ashland,l.c.l. (15) A10 .4.45
Cleveland,c.l. R2 .....4.30
Warren,O.c.l. R2 .....4.30

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Ashland,Ky. (15) A10 ..3.70
Bessemer,Ala. T2 .....3.70
Clairton,Pa. U5 .....3.70
Claymont,Del. C22 .....4.15
Cleveland J5, R2 .....3.70
Coatesville,Pa. L7 .....4.15
Conshohocken,Pa. A3 ..4.15
Fairfield,Ala. T2 .....3.70
Fontana,Calif.(30) K1 ..4.30
Gary,Ind. U5 .....3.70
GraniteCity,Ill. G4 .....4.40
Geneva,Utah C11 .....3.70
Harrisburg,Pa. C5 .....6.30
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1..3.70
Johnstown,Pa. B2 .....3.70
Lackawanna,N.Y. B2 ..3.70
Minnequa,Colo. C10 ....4.50
Munhall,Pa. U5 .....3.70
Pittsburgh J5 .....3.70
Seattle B3 .....4.60
Sharon,Pa. S3 .....3.95
So.Chicago,Ill. U5 W14..3.70
SparrowsPoint,Md. B2 ..3.70
Steubenville,O. W10 ....3.70
Warren,O. R2 .....3.70
Weirton,W.Va. W6 .....4.00
Youngstown R2, U5, Y1..3.70

PLATES, Carbon A.R.
Fontana,Calif. K1 .....5.45
Geneva,Utah C11 .....4.85

PLATES, Wrought Iron
Economy,Pa. B14 .....8.60

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Alton,Ill. L1 .....4.15
Atlanta,Ga. A11 .....4.25
Bessemer,Ala. T2 .....3.70
Buffalo R2 .....3.70
Canton,O. R2 .....3.70
Clairton,Pa. U5 .....3.70
Cleveland R2 .....3.70
Detroit R7 .....3.85
Emeryville,Calif. J7 ....4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....3.70
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1..3.70
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.15
Niles,Calif. P1 .....5.05
N.Tonawanda,N.Y. B11..3.70
Pittsburg,Calif. C11 ....4.40
Pittsburgh J5 .....3.70
Portland,Oreg. O4 .....4.65
Seattle B3, N14 .....4.45
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 ....4.40
Weirton,W.Va. W6 .....3.85
So.Chicago R2, U5, W14..3.70
So.Duquesne,Pa. U5 ....3.70
So.SanFran.,Cal. B3 ....4.45
Youngstown R2, U5 ....3.70

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....3.70
Atlanta A11 .....4.25
Johnstown,Pa. B2 .....3.70
Lackawanna,N.Y. B2 ..3.70
Niles,Calif. P1 .....5.05
Portland,Oreg. O4 .....4.65
SanFrancisco S7 .....4.85

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....3.90

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.30
Buffalo R2 .....4.30
Canton,O. R2 .....4.30
Canton,O.(29) T7 .....3.95
Clairton,Pa. U5 .....4.30
Detroit R7 .....4.45
Ecorse,Mich. G5 .....4.65
Fontana,Calif. K1 .....5.35
Gary,Ind. U5 .....4.30
Houston S5 .....4.70
Ind.Harbor,Ind. I-2, Y1..4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 .....4.90
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....5.35
Massillon,O. R2 .....4.30
Midland,Pa. C18 .....4.30
So.Chicago R2, U5, W14..4.30
So.Duquesne,Pa. U5 ....4.30
Struthers,O. Y1 .....4.30
Warren,O. C17 .....4.30
Youngstown U5 .....4.30

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....4.55
Gary,Ind. U5 .....4.55
Youngstown U5 .....4.55

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.55
Bessemer,Ala. T2 .....5.55
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....5.55
Cleveland R2 .....5.55
Fairfield,Ala. T2 .....5.55
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.55
Ind.Harbor,Ind. I-2 ....5.55
IndianaHarbor,Ind. Y1 ..6.05
Johnstown,Pa. B2 .....5.55
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 .....6.25
Pittsburgh J5 .....5.55
Seattle B3 .....6.30
So.Duquesne,Pa. U5 ....5.55
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 .....6.05
Youngstown U5 .....5.55

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 .....4.55
BeaverFalls,Pa. M12, R2 4.55
Buffalo B5 .....4.60
Camden,N.J. P13 .....5.00
Carnegie,Pa. C12 .....4.55
Chicago W18 .....4.55
Cleveland A7, C20 .....4.55
Detroit P17 .....4.70
Donora,Pa. A7 .....4.55
Elyria,O. W8 .....4.55
FranklinPark,Ill. N5 ....4.55
Gary,Ind. R2 .....4.55
GreenBay,Wis. F7 .....4.55
Hammond,Ind. L2, M13..4.55
Hartford,Conn. R2 .....5.10
Harvey,Ill. B5 .....4.55
LosAngeles R2 .....6.00
Mansfield,Mass. B5 .....5.10
Massillon,O. R2, R8 ....4.55
Monaca,Pa. S17 .....4.55
Newark,N.J. W18 .....5.00
Plymouth,Mich. P5 .....4.80
Pittsburgh J5 .....4.55
Putnam,Conn. W18 .....5.10
Readville,Mass. C14 .....5.10
St.Louis,Mo. M5 .....4.95
So.Chicago,Ill. W14 .....4.55
SpringCity,Pa.(5) K3 ..5.00
Struthers,O. Y1 .....4.55
Waukegan,Ill. A7 .....4.55
Youngstown F3, Y1 .....4.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....5.40
BeaverFalls,Pa. M12 ....5.40
Bethlehem,Pa B2 .....5.40
Buffalo B5 .....5.40
Camden,N.J. P13 .....5.80
Canton,O. R2 .....5.40
Canton,O(29) T7 .....4.90
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7 .....5.45
Cleveland C20 .....5.40
Detroit P17 .....5.55
Donora,Pa. A7 .....5.45
Elyria,O. W8 .....5.40
Gary,Ind. R2 .....5.40
Hammond,Ind. L2, M13 ..5.40
Hartford,Conn. R2 .....5.85
Harvey,Ill. B5 .....5.40
Lackawanna,N.Y. B2 ..5.40
Mansfield,Mass. B5 .....5.85
Massillon,O. R2, R8 ....5.40
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.75
Plymouth,Mich. P5 .....5.60
So.Chicago,Ill. R2, W14..5.40
Struthers,O. Y1 .....5.40
Warren,O. C17 .....5.40
Waukegan,Ill. A7 .....5.45
Worcester,Mass. A7 .....5.75
Youngstown F3, Y1 .....5.40

RAIL STEEL BARS
ChicagoHts.(3,4) C2 ...4.75
Chicago Hts.(3,4) I-2 ..4.75
Franklin,Pa.(3,4) F5 ...4.75
FortWorth,Tex.(26) T4 ..4.85
Huntngtn,W.Va.(3) W7 .5.50
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....3.80
Tonawanda(3,4) B12 ....4.75
Williamsport(3) S19 ....5.00
Williamsport(4) S19 ....5.10

BARS, Wrought Iron
Dover,N.J.(Staybolt)U1 15.00
Dover(Eng.Bolt) U1 ..13.50
Dover(Wrght.Iron) U1 .12.25
Economy,Pa.(S.R.) B14..9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt)L5 .14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ...13.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ...3.70
Atlanta A11 .....4.25
Buffalo R2 .....3.70
Cleveland R2 .....3.70
Emeryville,Calif. J7 ....4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....3.70
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1..3.70
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ..3.70
Massillon,O. R2, R8 ....5.40
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.75
Plymouth,Mich. P5 .....5.60
So.Chicago,Ill. R2, W14..5.40
Struthers,O. Y1 .....5.40
Warren,O. C17 .....5.40
Waukegan,Ill. A7 .....5.45
Worcester,Mass. A7 .....5.75
Youngstown F3, Y1 .....5.40

RAIL STEEL BARS
ChicagoHts.(3,4) C2 ...4.75
Chicago Hts.(3,4) I-2 ..4.75
Franklin,Pa.(3,4) F5 ...4.75
FortWorth,Tex.(26) T4 ..4.85
Huntngtn,W.Va.(3) W7 .5.50
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....3.80
Tonawanda(3,4) B12 ....4.75
Williamsport(3) S19 ....5.00
Williamsport(4) S19 ....5.10

BARS, Wrought Iron
Dover,N.J.(Staybolt)U1 15.00
Dover(Eng.Bolt) U1 ..13.50
Dover(Wrght.Iron) U1 .12.25
Economy,Pa.(S.R.) B14..9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt)L5 .14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ...13.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ...3.70
Atlanta A11 .....4.25
Buffalo R2 .....3.70
Cleveland R2 .....3.70
Emeryville,Calif. J7 ....4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....3.70
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1..3.70
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ..3.70
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.15
Niles,Calif. P1 .....5.05
Pittsburg,Calif. C11 ....4.40
Pittsburgh J5 .....3.70
SparrowsPoint,Md. B2 ..3.70
Steubenville,O. W10 ....3.70
Torrance,Calif. C11 ....4.30
Warren,O. R2 .....3.60
Weirton,W.Va. W6 .....3.60
WestLeechburg,Pa. A4 ..3.75
Youngstown U5, Y1 ....3.60

SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ..4.75
Dover,O. R1 .....5.65
Ind.Harbor,Ind. I-2 ....5.40
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.75
Torrance,Calif. C11 ....5.40

SHEETS, H.R. (14 ga., heavier)
High-Strength Low-Alloy
Cleveland J5, R2 .....5.40
Conshohocken,Pa. A3 ...5.65
Ecorse,Mich. G5 .....5.95
Fairfield,Ala. T2 .....5.40
Fontana,Calif. K1 .....6.35
Gary,Ind. U5 .....5.40
Ind.Harbor,Ind. I-2 ....5.40
Ind.Harbor,Ind. Y1 .....5.90
Irvin,Pa. U5 .....5.40
Lackawanna(35) B2 ....5.40
Pittsburgh J5 .....5.40
Sharon,Pa. S3 .....5.40
So.Chicago,Ill. U5 .....5.40
SparrowsPoint(36) B2 ..5.40
Warren,O. R2 .....5.40
Weirton,W.Va. W6 .....5.75
Youngstown U5 .....5.40
Youngstown Y1 .....5.90

SHEETS, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5, R2 .....6.65
Ecorse,Mich. G5 .....7.10
Fontana,Calif. K1 .....7.50
Gary,Ind. U5 .....6.55
IndianaHarbor,Ind. Y1..7.05
IndianaHarbor,Ind. I-2..6.55
Irvin,Pa. U5 .....6.55
Lackawanna(37) B2 ....6.55
Pittsburgh J5 .....6.55
SparrowsPoint(38) B2 ..6.55
Warren,O. R2 .....6.55
Weirton,W.Va. W6 .....6.90
Youngstown Y1 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10 .....4.35
Cleveland J5, R2 .....4.35
Ecorse,Mich. G5 .....4.55
Fairfield,Ala. T2 .....4.35
Follansbee,W.Va. F4 ...5.35
Fontana,Calif. K1 .....5.30
Gary,Ind. U5 .....4.35
GraniteCity,Ill. G4 .....5.05
Ind.Harbor,Ind. I-2, Y1.4.35
Irvin,Pa. U5 .....4.35
Lackawanna,N.Y. B2 ..4.35
Middletown,O. A10 .....4.35
Pittsburg,Calif. C11 ....5.30
Pittsburgh J5 .....4.35
SparrowsPoint,Md. B2..4.35
Steubenville,O. W10 ....4.35
Warren,O. R2 .....4.35
Weirton,W.Va. W6 .....4.35
Youngstown Y1 .....4.35

SHEETS, Gal'd No. 10 Steel

AlabamaCity,Ala. R2 ..4.80
Ashland,Ky.(5) A10 ...4.80
Canton,O. R2 .....4.80
Dover,O. R1 .....5.50
Fairfield,Ala. T2 .....4.80
Gary,Ind. U5 .....4.80
GraniteCity,Ill. G4 .....5.50
Ind.Harbor,Ind. I-2 ...4.80
Irvin,Pa. U5 .....4.80
Kokomo,Ind.(13) C16 ..5.20
MartinaFerry,O. W10 ..4.80
Niles,O. N12 .....6.00
Pittsburg,Calif. C11 ....5.55
SparrowsPoint,Md. B2..4.80
Steubenville,O. W10 ....4.80
Torrance,Calif. C11 ....5.55
Weirton,W.Va. W6 ....4.80

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5 .....7.20
SparrowsPoint(39) B2 ..6.75

SHEETS, Galvannealed Steel

Canton,O. R2 .....5.35
Irvin,Pa. U5 .....5.35
Kokomo,Ind.(13) C16 ...5.75
Niles,O. N12 .....6.55

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10 .....5.05
Middletown,O. A10 .....5.05

SHEETS, Electro Galvanized

Cleveland R2 (28) 5.65
Niles,O. R2 (28) 5.65
Weirton,W.Va. W6 .....5.50

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2 ....5.70

SHEETS, Drum Body

Pittsburg,Calif. C11 ....4.30
Torrance,Calif. C11 ....4.30

SHEETS, Well Casing

Fontana,Calif. K1 .....5.10

BLUED Stock, 29 ga.

Yorkville,O. W10 .....6.80
Follansbee,W.Va.(23)F4 6.85

SHEETS, Enameling Iron

Ashland,Ky.(8) A10 ....4.65
Cleveland R2 .....4.65
Gary,Ind. U5 .....4.65
GraniteCity,Ill. G4 .....5.35
Ind.Harbor,Ind. I-2 ....4.65
Irvin,Pa. U5 .....4.65
Middletown,O. A10 .....4.65
Youngstown Y1 .....4.65

BLACK PLATE (Base Box)

Aliquippa,Pa. J5 .....$6.25
Fairfield,Ala. T2 .....6.35
Gary,Ind. U5 .....6.25
GraniteCity,Ill. G4 ....6.45
Ind.Harbor,Ind. I-2, Y1.6.25
Irvin,Pa. U5 .....6.25
Niles,O. R2 .....6.25
Pittsburg,Calif. C11 ....7.00
SparrowsPoint,Md. B2 ..6.35
Warren,O. R2 .....6.25
Weirton,W.Va. W6 .....6.25
Yorkville,O. W10 .....6.25

HOLLOWWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4 ...5.85
Gary,Ind. U5 .....5.85
GraniteCity,Ill. G4 ....6.05
Ind.Harbor,Ind. Y1 .....5.30
Irvin,Pa. U5 .....5.85
Yorkville,O. W10 .....6.15

SHEETS, Culvert No. 16	Cu Alloy	Cu Fe
Ashland,Ky. A10.	5.60	...
Canton,O. R2 ...	5.65	6.10
Fairfield,Ala. T2.	5.60	5.85
Gary,Ind. U5 ...	5.60	5.85
IndianaHarbor I-2	5.60	5.85
Irvin,Pa. U5	5.60	5.85
Kokomo,Ind. C16.	6.25	...
MartinsFy,O. W10	5.60	5.85
Pittsburg,Cal. C11	6.35	...
SparrowsPt. B2 ..	5.60	...
Torrance,Cal. C11	6.35	...

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10 .....5.85
Fairfield,Ala. T2 .....5.85

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10 ...3.85
Cleveland R2 .....4.20
Ind.Harbor,Ind. I-2 ....3.85
Warren,O. R2 .....4.20

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....4.95
Middletown,O. A10 .....4.85
Warren,O. R2 .....4.95

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland, Ky.(8) A10 ...5.05
Canton,O. R2 .....5.55

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10 .....5.30
Middletown,O. A10 .....5.30

SHEETS, ALUMINIZED

Butler,Pa. A10 .....8.15

TINPLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5.	$8.45	$8.70
Fairfield,Ala. T2.	8.55	8.80
Gary,Ind. U5 ...	8.45	8.70
Ind.Har. I-2, Y1.	8.45	8.70
Irvin,Pa. U5	8.45	8.70
Pitts.,Cal. C11 ...	9.20	9.45
Sp.Pt.,Md. B2 ...	8.55	8.80
Warren,O. R2 ...	8.45	8.70
Weirton,W.Va.W6.	8.45	8.70
Yorkville,O. W10.	8.45	8.70

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2 .....$7.60
Gary,Ind. U5 .....7.50
Irvin,Pa. U5 .....7.50
SparrowsPoint,Md. B2 ..7.60
Yorkville,O. W10 .....7.50

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10 .....$8.40

SHEET, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5 .....$9.50
Yorkville,O. W10 .....9.50

SHEET, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10 5.20
Gary,Ind. U5 .....5.20
Mansfield,O. E6 .....6.05
Middletown,O. A10 .....5.20
Niles,O. N12 .....6.00
Weirton,W.Va. W6 .....5.20

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 .....5.60

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5 .....9.50

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2 .....5.30
Conshohocken,Pa. A3 ..5.55
Ecorse,Mich. G5 .....5.95
Fairfield,Ala. T2 .....5.30
Fontana,Calif. K1 .....6.20
Gary,Ind. U5 .....5.30
Ind.Harb.,Ind. I-2 .....5.30
IndianaHarbor,Ind. Y1..5.80
Lackawanna,N.Y. B2 ..4.95
LosAngeles(25) B3 .....6.05
Seattle B3 .....6.30
Sharon,Pa. S3 .....5.40
So.SanFrancisco(25) B3.6.05
SparrowsPoint,Md. B2 ..4.95
Warren,O. R2 .....5.30
Weirton,W.Va. W6 .....5.75
Youngstown Y1 .....5.80
Youngstown U5 .....5.30

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5 .....6.70
Cleveland A7 .....6.55
Dover,O. G6 .....7.30
Fontana,Calif. K1 .....6.95
Lackawanna,N.Y. B2 ..6.40
Sharon,Pa. S3 .....6.55
SparrowsPoint,Md. B2 ..6.40
Warren,O. R2 .....6.55
Weirton,W.Va. W6 .....7.20
Youngstown Y1 .....7.05

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ...3.50
Alton,Ill. L1 .....3.95
Ashland,Ky.(8) A10 ....3.50
Atlanta A11 .....4.05
Bessemer,Ala. T2 .....3.50
Bridgeprt,Conn.(10) S15.4.00
Buffalo(27) R2 .....3.50
Butler,Pa. A10 .....3.50
Carnegie,Pa. S18 .....4.00
Conshohocken,Pa. A3 ..3.90
Detroit M1 .....4.40
Ecorse,Mich. G5 .....3.80
Fairfield,Ala. T2 .....3.50
Fontana,Calif. K1 .....4.75
Gary,Ind. U5 .....3.50
Houston,Tex. S5 .....4.90
Ind.Harbor,Ind. I-2, Y1.3.50
Johnstown,Pa.(25) B2 ..3.50
KansasCity,Mo.(9) S5...4.10
Lackawanna,N.Y.(32)B2 3.50
LosAngeles B3 .....4.25
Milton,Pa. B6 .....4.35
Minnequa,Colo. C10 ....4.55
NewBritain(10) S15 ....4.00
No.Tonawanda,N.Y. B11 3.50
Pittsburg,Calif. C11 ....4.25
Riverdale,Ill. A1 .....3.50
SanFrancisco S7 .....4.85
Seattle E3, N14 .....4.50
Sharon,Pa. S3 .....4.00
So.Chicago,Ill. W14 ....3.50
SoSanFrancisco B3 .....4.25
SparrowsPoint,Md. B2 ..3.50
Torrance,Calif. C11 ....4.25
Warren,O. R2 .....3.50
Weirton,W.Va. W6 .....3.60
WestLeechburg,Pa. A4..3.75
Youngstown U5, Y1 ....3.50

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15.5.45
Carnegie,Pa. S18 .....5.85
Fontana,Calif. K1 .....6.70
Gary,Ind. U5 .....5.50
Houston,Tex. S5 .....5.90
KansasCity,Mo. S5 .....6.10
Midland,Pa. C18 .....5.85
NewBritn,Conn.(10) S15.5.45
Sharon,Pa. S3 .....5.85
Youngstown U5 .....5.50

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6 ..5.50
Berea,O. C7 .....6.60
Bridgeprt,Conn.(10) S15.5.35
Butler,Pa. A10 .....4.85
Cleveland A7, J5 .....4.65
Dearborn,Mich. D3 .....5.60
Detroit D2 .....5.60
Detroit M1 .....5.45
Dover,O.(40) G6 .....5.50
Ecorse,Mich. G5 .....4.85
Follansbee,W.Va. F4 ...5.35
Fontana,Calif. K1 .....6.30
FranklinPark,Ill.(40)T6. 4.90
Ind.Harbor,Ind. I-2 ....4.90
Lackawanna,N.Y. B2 ..4.65
LosAngeles C1 .....6.40
Mattapan,Mass. T6 ....5.50
Middletown,O. A10 ....4.65
NewBritain(10) S15 ....5.35
NewCastle,Pa. B4 .....5.35
NewCastle,Pa.(40) E5...5.25
NewHaven,Conn. D2 ...5.85
NewHaven,Conn. A7 ...5.15
Pawtucket,R.I. R3 .....6.00
Pawtucket,R.I.(21) N8..5.85
Riverdale,Ill.(40) A1 ...4.90
Rome,N.Y. R6 .....5.10
Sharon,Pa. S3 .....5.35
SparrowsPoint,Md. B2 ..4.65
Trenton,N.J. R5 .....6.00
Wallingford,Conn. W2 ..5.85
Warren,O.(40) T5 .....5.25
Warren,O. R2 .....4.65
Weirton,W.Va. W6 ....4.65
Youngstown C8 (40) ...5.25
Youngstown Y1 .....4.65

STRIP, Electro Galvanized

Dover,O. G6 .....5.50
Warren,O. T5 .....5.25
Weirton,W.Va. W6 .....4.65
Youngstown C8 .....5.25

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
Bristol,Conn. W1	...	...	7.70	9.65	....
Carnegie,Pa. S18	...	6.80	7.40	9.35	11.65
Cleveland A7	4.65	6.45	7.40	9.35	11.65
Dearborn,Mich. D3	5.60	7.05	7.65	...	....
Detroit D2	5.60	6.65	7.25	...	....
Dover,O. G6	5.50	6.80	7.40	9.35	11.65
FranklinPark,Ill. T6	5.00	6.60	7.55	9.50	11.80
Harrison,N. J. C18	...	...	7.70	9.65	11.95
Mattapan,Mass. T6	5.50	6.75	7.70	9.65	11.95
NewBritn.,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
NewCastle,Pa. B4	5.35	6.80	7.40	9.35	....
NewCastle,Pa. E5	5.50	6.80	7.40	9.35	11.65
NewHaven,Conn. D2 ...	5.85	6.75	7.35	...	....
NewYork W3	...	7.10	7.70	9.65	11.95
Pawtucket,R.I. N8:					
Cleve.orPitts.Base	...	6.80	7.40	9.35	11.65
Worcester,Mass.,Base .	5.85	7.10	7.70	9.65	11.95
Sharon,Pa. S3	5.35	6.80	7.40	9.35	11.65
Trenton,N.J. R5	...	7.10	7.70	9.65	11.95
Wallingford,Conn. W2 .	5.85	6.75	7.35	9.30	11.60
Weirton,W.Va. W6	5.35	6.80	7.40	9.35	11.65
Worcester,Mass. A7 ...	4.95	6.75	7.70	9.65	11.95
Worcester,Mass. T6	5.50	6.75	7.70	9.65	11.95
Youngstown C8	...	6.80	7.40	9.35	11.65
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	10.30	12.50	15.35
Harrison,N.J. C18	...	...	10.30	12.50	15.35
New York W3	...	...	10.30	12.50	15.35

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.15	$7.40	$7.80
Fairfield,Ala. T2	7.25	7.50	7.90
Gary,Ind. U5	7.15	7.40	7.80
GraniteCity,Ill. G4	7.35	7.60	8.00
Ind.Harbor,Ind. I-2, Y1	7.15	7.40	7.80
Irvin,Pa. U5	7.15	7.40	7.80
Niles,O. R2	7.15	7.40	7.80
Pittsburg,Calif. C11	7.90	8.15	8.55
SparrowsPoint,Md. B2	7.25	7.50	7.90
Weirton,W.Va. W6	7.15	7.40	7.80
Yorkville,O. W10	7.15	7.40	7.80

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths)	...	...	7.25	8.50	9.30
Brackenridge,Pa. A4	...	...	7.75	9.00	9.80
GraniteCity,Ill.G4 (cut lengths)	...	...	7.95	9.20	...
Ind.Harbor,Ind. I-2	6.95	7.25	(34)	...	...
Mansfield,O. E6 (cut lengths).	7.10	7.25	7.75	9.00	9.80
Niles,O. N12 (cut lengths)....	...	6.75	7.25	...	...
Vandergrift,Pa. U5	...	7.25	7.75	9.00	9.80
Warren,O. R2	6.95	7.25	7.75	9.00	9.80
Zanesville,O. A10	...	7.25	7.75	9.00	9.80

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge,Pa. A4	10.35	....	....	....
Vandergrift,Pa. U5	10.35	10.90	11.60	12.40
Warren,O. R2	10.35	....	....	....
Zanesville,O. A10	10.35	10.90	11.60	12.40

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	14.75	15.25
Vandergrift,Pa. U5	12.90	13.75	14.75	15.25

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Bolardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Co.
B14 A. M. Byers Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Corp.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)	S15 10.75
Carnegie,Pa., S18	10.60
Cleveland A7	10.00
Dover,O. G6	10.50
Fontana,Calif. K1	11.65
Harrison,N.J. C18	10.60
Midland,Pa. C18	10.60
NewBritn,Conn.(10)	S15 10.75
Pawtucket,R.I.(11)	N8 10.75
Pawtucket,R.I.(12)	N8 11.05
Sharon,Pa. S3	10.60
Worcester,Mass. A7	10.30
Youngstown C8	10.60

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.75
Warren,O. R2	4.10

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.25

TIGHT COOPERAGE HOOP

Atlanta A11	4.05
Riverdale,Ill. A1	3.90
Sharon,Pa. S3	4.15
Youngstown U5	3.75

WIRE, Tire Bead

Bartonville,Ill.(1) K4	10.90
Monessen,Pa. P16	11.40
Roebling,N.J. R5	11.55

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
AlabamaCity R2	5.70	5.95
Aliquippa J5	5.70	6.15
Atlanta A11	5.95	6.40
Bartonville(19)K4	5.70	6.15
Buffalo W12	4.85	...
Cleveland A7	5.70	6.15
Crawfordsville M8	5.95	6.40
Donora,Pa. A7	5.70	6.15
Duluth,Minn. A7	5.70	6.15
Fairfield T2	5.70	6.15
Houston,Tex. S5	6.10	6.55
Johnstown B2	5.70	6.15
Joliet,Ill. A7	5.70	6.15
KansasCy,Mo. S5	6.30	6.75
Kokomo C16	5.80	6.05
LosAngeles B3	6.65	...
Minnequa C10	5.95	6.45
Monessen P7	5.95	6.40
Palmer W12	5.15	...
Pitts.,Calif. C11	6.65	6.80
Prtsmth.(18)P12	6.10	6.60
Rankin A7	5.70	6.15
So.Chicago R2	5.70	5.95
So.S.Fran. C10	6.65	7.10
SparrowsPt. B2	5.80	6.25
Sterling,Ill.(1)	N15 5.70	6.15
Struthers,O. Y1	5.70	6.15
Torrance,Cal. C11	6.65	...
Worcester A7	6.00	6.45

ROPE WIRE

	(A)	(B)
Alton,Ill. L1	8.65	8.90
Bartonville,Ill. K4	8.55	8.80
Buffalo W12	8.55	8.80
Fostoria,O. S1	8.85	9.10
Johnstown,Pa. B2	8.55	8.80
Monessen,Pa. P16	8.55	8.80
Monessen,Pa. P7	8.80	9.05
Muncie,Ind. I-7	8.75	9.00
Palmer,Mass. W12	8.85	9.10
Portsmouth,O. P12	8.55	8.80
Roebling,N.J. R5	8.85	9.10
SparrowsPt. B2	8.65	8.90
Struthers,O. Y1	8.55	8.80
Worcester J4, T6	8.85	9.10

(A) Plow and Mild Plow
(B) Improved Plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	4.85
Aliquippa,Pa. J5	4.85
Atlanta A11	5.10
Alton,Ill. L1	5.05
Bartonville,Ill.(1) K4	4.85
Buffalo W12	4.85
Chicago W13	5.10
Cleveland A7, C20	4.85
Crawfordsville,Ind. M8	5.10
Donora,Pa. A7	4.85
Duluth,Minn. A7	4.85
Fairfield,Ala. T2	4.85
Fostoria,O.(24) S1	5.35
Houston S5	5.25
Johnstown,Pa. B2	4.85
Joliet,Ill. A7	4.85
KansasCity,Mo. S5	5.45
Kokomo,Ind. C16	4.95
LosAngeles B3	5.80
Minnequa,Colo. C10	5.10
Monessen,Pa. P7	5.10
Newark 6-8 ga. I-1	5.50
No.Tonawanda B11	4.85
Palmer,Mass. W12	5.15
Pittsburg,Calif. C11	5.80
Portsmouth,O. P12	5.25
Rankin,Pa. A7	4.85
So.Chicago,Ill. R2	4.85
So.SanFrancisco C10	5.80
SparrowsPoint,Md. B2	4.95
Sterling,Ill.(1) N15	4.85
Struthers,O. Y1	4.85
Torrance,Calif. C11	5.80
Waukegan,Ill. A7	4.85
Worcester,Mass. A7, T6	5.15

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	6.20
Buffalo W12	6.35
Cleveland A7	5.85
Crawfordsville,Ind. M8	6.20
Detroit D2	6.20
Dover,O. G6	6.20
Fostoria,O. S1	6.00
Kokomo,Ind. C16	5.70
FranklinPark,Ill. T6	6.20
Massillon,O. R8	5.85
Monessen,Pa. P16	5.85
Monessen,Pa. P7	6.10
NewHaven,Conn. D2	6.50
Pawtucket,R.I.(12) N8	6.85
Trenton,N.J. R5	6.15
Worcester,Mass. A7	6.15
Worcester,Mass. T6	6.50
Worcester,Mass. W12	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.50
Monessen,Pa. P16	8.50
Muncie,Ind. I-7	8.70
Roebling,N.J. R5	8.80
SparrowsPoint,Md. B2	8.60
Johnstown,Pa. B2	8.50

WIRE (16 gage)

	Anl'd Stone	Galv. Stone
Aliquippa J5	10.15	12.15
Bartonville(1)K4	10.25	11.95
Cleveland A7	10.25	12.15
Crawfrdsville M8	10.30	12.00
Fostoria,O. S1	10.40	13.00
Johnstown B2	10.25	12.15
Kokomo C16	10.25	11.95
Minnequa C10	10.40	12.40
Palmer,Mass. W12	10.25	12.15
Pitts.Cal. C11	10.60	12.50
Prtsmth.(18) P12	10.55	12.30
SparrowsPt. B2	10.35	12.25
Waukegan A7	10.25	12.15

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	6.25
Alton,Ill. L1	6.45
Bartonville,Ill.(1) K4	6.25
Buffalo W12	6.25
Cleveland A7	6.25
Donora,Pa. A7	6.25
Duluth,Minn. A7	6.25
Fostoria,O. S1	6.25
Johnstown,Pa. B2	6.25
LosAngeles B3	7.20
Milbury,Mass.(12) N6	8.05
Monessen,Pa. P7, P16	6.25
Muncie,Ind. I-7	6.45
Palmer,Mass. W12	6.55
Pittsburg,Calif. C11	7.20
Roebling,N.J. R5	6.55
Portsmouth,O. P12	6.25
So.Chicago,Ill. R2	6.25
So.SanFrancisco C10	7.20
SparrowsPoint,Md. B2	6.35
Struthers,O Y1	6.25
Trenton,N.J. A7	6.55
Waukegan,Ill. A7	6.25
Worcester A7, T6, W12	6.55
Worcester,Mass. J4	6.75

WIRE, Fine & Weaving (8"Coils)

Bartonville,Ill.(1) K4	8.90
Buffalo W12	8.90
Chicago W13	8.90
Cleveland A7	8.90
Crawfordsville,Ind. M8	8.95
Fostoria,O. S1	8.90
Johnstown,Pa. B2	8.90
Kokomo,Ind. C16	8.90
Monessen,Pa. P16	8.90
Muncie,Ind. I-7	9.10
Palmer,Mass. W12	9.20
Portsmouth,O. P12	8.90
Roebling,N.J. R5	9.20
Waukegan,Ill. A7	8.90
Worcester,Mass. A7, T6	9.20

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	137
Aliquippa,Pa. J5	141
Atlanta A11	144
Bartonville,Ill.(19) K4	144
Crawfordsville,Ind. M8	146
Donora,Pa. A7	141
Duluth,Minn. A7	141
Fairfield,Ala. T2	141
Houston,Tex. S5	149
Johnstown,Pa. B2	141
Joliet,Ill. A7	141
KansasCity,Mo. S5	153
Kokomo,Ind. C16	143
Minnequa,Colo. C10	147
Monessen,Pa. P7	146
Pittsburg,Calif. C11	161
Portsmouth,O.(18) P12	148
Rankin,Pa. A7	141
So.Chicago,Ill. R2	137
So.SanFran.,Calif. C10	161
SparrowsPoint,Md. B2	143
Sterling,Ill.(1) N15	141

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	123
Atlanta A11	126
Bartonville,Ill.(19) K4	123
Crawfordsville,Ind. M8	132
Donora,Pa. A7	123
Duluth,Minn. A7	123
Fairfield,Ala. T2	123
Joliet,Ill. A7	123
KansasCity,Mo. S5	135
Kokomo,Ind. C16	125
Minnequa,Colo. C10	128
Pittsburg,Calif. C11	147
So.Chicago,Ill. R2	123
So.SanFran.,Calif. C10	147
SparrowsPoint,Md. B2	125
Sterling,Ill.(1) N15	123

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.90
Alton,Ill. L1	6.10
Buffalo W12	5.90
Cleveland A7	5.90
Donora,Pa. A7	5.90
Duluth,Minn. A7	5.90
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Monessen,Pa. P7, P16	5.90
NewHaven,Conn. A7	6.20
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	6.85
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
So.SanFrancisco C10	6.85
SparrowsPoint,Md. B2	6.00
Torrance,Calif. C11	6.85
Trenton,N.J. A7	6.20
Waukegan,Ill. A7	5.90
Worcester,Mass. A7	6.20

WOVEN FENCE, 9-15½ Ga.

	Col.
AlabamaCity,Ala. R2	127
Ala.City,Ala.,17-18ga.R2	214
Aliquippa,Pa.9-14½ga.J5	131
Atlanta A11	134
Bartonville,Ill.(19) K4	131
Crawfordsville,Ind. M8	133
Donora,Pa. A7	131
Duluth,Minn. A7	131
Fairfield,Ala. T2	131
Houston,Tex. S5	139
Johnstown,Pa. B2	131
Johnstown,17ga.,6" B2	205
Johnstown,17ga.,4" B2	208
Joliet,Ill. A7	131
KansasCity,Mo. S5	143
Kokomo,Ind. C16	133
Minnequa,Colo. C10	139
Monessen,Pa. P7	136
Pittsburg,Calif. C11	154
Portsmouth,O.(18) P12	138
Rankin,Pa. A7	131
So.Chicago,Ill. R2	127
Sterling,Ill.(1) N15	131

FENCE POSTS

ChicagoHts.,Ill. C2	140
Duluth,Minn. A7	125
Franklin,Pa. F5	140
Huntington,W.Va. W7	140
Johnstown,Pa. B2	140
Marion,O. P11	140
Minnequa,Colo. C10	130
Moline,Ill. R2	136
So.Chicago,Ill. R2	140
Tonawanda,N.Y. B12	140
Williamsport,Pa. S19	150

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.85
Lebanon,Pa.(31) B2	9.85
Minnequa,Colo. C10	9.85
Pittsburgh O3, P14	9.85
Seattle B3	10.35

RAILS

	Std. No. 1	Std. No. 2	Std. All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	3.60	3.50	3.55	4.00
Ensley,Ala. T2	3.60	3.50	...	4.00
Fairfield,Ala. T2	...	...	...	4.00
Gary,Ind. U5	3.60	3.50	3.55	...
Huntington,W.Va. W7	...	...	...	5.00
Ind.Harbor,Ind. I-2	3.60	3.50	3.55	...
Johnstown,Pa. B2	...	...	...(16)	4.00
Lackawanna,N.Y. B2	3.60	3.50	...	4.00
Minnequa,Colo. C10	3.60	3.50	...	4.50
Steelton,Pa. B2	3.60	3.50	...	...
Williamsport,Pa. S19	...	...	...	4.75

NAILS & STAPLES, Stock
To dealers & mfrs. (7)

	Col.
AlabamaCity,Ala. R2	118
Aliquippa,Pa.(13) J5	118
Atlanta A11	121
Bartonville,Ill.(19) K4	118
Chicago,Ill. W13	118
Cleveland A9	125
Crawfordsville,Ind. M8	122
Donora,Pa. A7	118
Duluth,Minn. A7	118
Fairfield,Ala. T2	118
Galveston,Tex. D7	126
Houston,Tex. S5	126
Johnstown,Pa. B2	118
Joliet,Ill. A7	118
KansasCity,Mo. S5	130
Kokomo,Ind. C16	120
Minnequa,Colo. C10	123
Monessen,Pa. P7	124
Pittsburg,Calif. C11	137
Portsmouth,O. P12	124
Rankin,Pa. A7	118
So.Chicago,Ill. R2	118
SparrowsPoint,Md. B2	120
Sterling,Ill.(1) N15	118
Torrance,Calif. C11	138
Worcester,Mass. A7	124

NAILS, Cut (100 lb keg)
To dealers (33)

Conshohocken,Pa. A3	$7.35
Wheeling,W.Va. W10	7.35

TIE PLATES

Fairfield,Ala. T2	4.50
Gary,Ind. U5	4.50
Ind.Harbor,Ind. I-2	4.50
Lackawanna,N.Y. B2	4.50
Minnequa,Colo. C10	4.50
Pittsburg,Calif. C11	4.65
Seattle B3	4.65
Steelton,Pa. B2	4.50
Torrance,Calif. C11	4.65

JOINT BARS

Bessemer,Pa. U5	4.70
Fairfield,Ala. T2	4.70
Ind.Harbor,Ind. I-2	4.70
Joliet,Ill. U5	4.70
Lackawanna,N.Y. B2	4.70
Minnequa,Colo. C10	4.70
Steelton,Pa. B2	4.70

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	6.15
KansasCity,Mo. S5	6.40
Lebanon,Pa. B2	6.15
Minnequa,Colo. C10	6.15
Pittsburgh J5	6.15
Seattle B3	6.65
So.Chicago,Ill. R2	6.15
Struthers,O. Y1	6.15
Youngstown R2	6.15

AXLES

Ind.Harbor,Ind. S13	5.60
Johnstown,Pa. B2	5.60

Key to Producers

M1	McLouth Steel Corp.
M4	Mahoning Valley Steel
M5	Medart Co.
M6	Mercer Tube & Mfg. Co.
M8	Mid-States Steel & Wire
M9	Midvale Co.
M12	Moltrup Steel Products
M13	Monarch Steel Co.
M14	McInnes Steel Co.
N2	National Supply Co.
N3	National Tube Div.
N5	Nelsen Steel & Wire Co.
N6	NewEng-HighCarb.Wire
N8	Newman-Crosby Steel
N12	Niles Rolling Mill Div.
N14	Nrthwst. Steel Roll. Mills
N15	Northwestern S.&W. Co.
N16	New Delphos Mfg. Co.
O3	Oliver Iron & Steel Corp.
O4	Oregon Steel Mills
P1	Pacific States Steel Corp.
P2	Pacific Tube Co.
P4	Phoenix Iron & Steel Co.
P5	Pilgrim Drawn Steel
P6	Pittsburgh Coke & Chem.
P7	Pittsburgh Steel Co.
P9	Pittsburgh Tube Co.
P11	Pollak Steel Co.
P12	Portsmouth Division, Detroit Steel Corp.
P13	Precision Drawn Steel
P14	Pitts. Screw & Bolt Co.
P15	Pittsburgh Metallurgical
P16	Page Steel & Wire Div., Amer. Chain & Cable
P17	Plymouth Steel Co.
R1	Reeves Steel & Mfg. Co.
R2	Republic Steel Corp.
R3	Rhode Island Steel Corp.
R5	Roebling's Sons, John A.
R6	Rome Strip Steel Co.
R7	Rotary Electric Steel Co.
R8	RelianceDiv.,EatonMfg.
S1	Seneca Wire & Mfg. Co.
S3	Sharon Steel Corp.
S5	Sheffield Steel Corp.
S6	Shenango Furnace Co.
S7	Simmons Co.
S8	Simonds Saw & Steel Co.
S9	Sloss-Sheffield S.&I. Co.
S13	Standard Forgings Corp.
S14	Standard Tube Co.
S15	Stanley Works
S16	Struthers Iron & Steel
S17	Superior Drawn Steel Co.
S18	Superior Steel Corp.
S19	Sweet's Steel Co.
S20	Southern States Steel
T2	Tenn. Coal & Iron Div.
T3	Tenn. Prod. & Chem.
T4	Texas Steel Co.
T5	Thomas Steel Co.
T6	Thompson Wire Co.
T7	Timken Roller Bearing
T9	Tonawanda Iron Div. Am. Rad. & Stan. San.
U1	Ulster Iron Works
U4	Universal Cyclops Steel
U5	United States Steel Co.
V2	Vanadium-Alloys Steel
V3	Vulcan Crucible Steel Co.
W1	Wallace Barnes Co.
W2	Wallingford Steel Co.
W3	Washburn Wire Co.
W4	Washington Steel Corp.
W6	Weirton Steel Co.
W7	W. Va. Steel & Mfg. Co.
W8	West.Auto.Mach.Screw
W9	Wheatland Tube Co.
W10	Wheeling Steel Corp.
W12	Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13	Wilson Steel & Wire Co.
W14	Wisconsin Steel Div. International Harvester
W15	Woodward Iron Co.
W18	Wyckoff Steel Co.
Y1	YoungstownSheet&Tube

TOOL STEEL

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	Mo	
18	4	1	....		1.505
18	4	2	....		1.650
20.25	4.25	1.6	12.25	3.535	3.675
19	4	2	7		2.460
18.25	4.25	1	4.75		2.125
18	4	2	9		2.445-2.45
13.5	4	3	....		1.6025
W	Cr	V	Mo		
6.4	4.5	1.9	5		0.96-0.965
6	4	3	6		1.190
1.5	4	1	8.5		0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

Footnotes:
(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.5c per 17 Ga. & heavier.
(14) Also wide flange beams.
(15) ¼" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 28 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.60c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Subject to 10% increase.
(30) Sheared: add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 7.35c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter: 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035": 0.035" and heavier. 0.25c higher.

The close attention to detail in every production step at National is combined with our more than forty years experience in roll making and the metallurgical skill of our research and production staff to give you durable, dependable National Rolls.

The best proof of their dependability is their performance in *your* stands. Why not try them and see.

THE NATIONAL ROLL & FOUNDRY CO.
Avonmore, Pennsylvania

SPECIALISTS IN IRON AND ALLOY IRON ROLLS AND CASTINGS

STANDARD PIPE, T & C

BUTTWELD — Carload Discounts from List, %

Size Inches	List Per Ft	Pounds Per Ft	Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	34.0	32.0	...	+0.5	+2.5	...
¼	6.0	0.42	28.5	26.5	...	+3.5	+5.5	...
⅜	6.0	0.57	23.5	21.5	...	+10.0	+12.0	...
½	8.5	0.85	36.0	34.0	35.0	12.0	10.0	11.0
¾	11.5	1.18	39.0	37.0	38.0	16.0	14.0	15.0
1	17.0	1.68	41.5	39.5	40.5	19.5	17.5	18.5
1¼	23.0	2.28	42.0	40.0	41.0	20.5	18.5	19.5
1½	27.5	2.78	42.5	40.5	41.5	21.5	19.5	20.5
2	37	3.68	43.0	41.0	42.0	22.0	20.0	21.0
2½	58.5	5.82	43.5	41.5	42.5	23.0	21.0	22.0
3	76.5	7.62	43.5	41.5	42.5	23.0	21.0	22.0

Column A: Etna, Pa. N2 and 36½ % on 3½", 4"; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 3½ points lower on ⅛", 1½ points lower on ¼", and 2 points lower on ⅜", W10; Sharon, Pa. M6, 1 point higher on ⅛", 2 points lower on ¼" and ⅜"; Wheatland, Pa. W9, 2 points lower on ⅛", ¼", ⅜".. Following make ½" and larger: Lorain, O., N3; Youngstown R2 and 36¼ % on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5; Fontana, Calif. K1 quotes 11½ points lower on ½" and larger continuous weld and 24% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., Y1; Alton, Ill., (Gary base) 2 points lower discount L1.

Column D: Butler, Pa. F6, ⅛-⅜"; Benwood, W. Va. W10, except plus 4% on ⅛", plus 6% on ¼", plus 13% on ⅜" and 15.5% on 3½", 4"; Sharon, Pa. M6, plus 2.5 on ⅛"; 1 point lower on ½", ¾", 1½ points lower on 1" and 1¼", 2 points lower on 1½", 2", 2½" and 3"; Wheatland, Pa. W9, add 2 points on ⅛", ¼", ⅜", 1 point lower on ¾", 2 points lower on 1", 1½", 2", 1½ points lower on 1¼", 2½", 3". Etna, Pa. N2 and 15.5% on 3½", 4". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, and 15½ % on 3½" and 4"; Youngstown Y1, Aliquippa, Pa. J5 quotes 1 point lower on ¾", 2 points lower on 1", 1½", 2", 1½ points lower on 1¼", 2½" and 3".

SEAMLESS AND ELECTRIC WELD — Carload Discounts from List, %

Size Inches	List Per Ft	Pounds Per Ft	Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	29.5	8.0	29.5	8.0
2½	58.5	5.82	32.5	11.5	32.5	11.5
3	76.5	7.62	32.5	11.5	32.5	11.5
3½	92.0	9.20	34.5	13.5	34.5	13.5
4	$1.09	10.89	34.5	13.5	34.5	13.5
5	1.48	14.81	37.0	16.0	37.0	16.0
6	1.92	19.18	37.0	16.0	37.0	16.0

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5 quotes 1½ pts lower on 2", 1 pt lower on 2½-6-in.; Lorain N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft., mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.		B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	.....	13	13.45	16.47	15.36	15.36
1¼	.....	13	16.09	19.71	15.61	18.19
1½	.....	13	17.27	21.15	17.25	20.30
1¾	.....	13	19.29	23.62	19.62	23.09
2	.....	13	21.62	26.48	21.99	25.86
2¼	.....	13	24.35	29.82	24.50	28.84
2¼	.....	12	26.92	32.97	26.98	31.76
2½	.....	12	29.65	36.32	29.57	34.76
2¾	.....	12	32.11	39.33	31.33	36.84
3	.....	12	34.00	41.64	32.89	38.70

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates 10%	Plates 20%	Strip Cold-Rolled Carbon Base Both Sides	Strip Cu Base Both Sides	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Cu Base Both Sides
302	....	....	....	....	19.75	26.24–27.50	77.00
304	25.00	29.50	....	....	24.50	27.50–27.77	77.00
309	30.50	35.00	....	....	....	....	....
310	36.50	41.00	....	....	....	....	144.00
316	29.50	34.00	....	....	26.00	35.92–36.50	....
317	34.50	39.00	....	....	....	....	....
318	33.50	38.00	....	....	....	....	....
321	26.50	31.00–32.00	....	....	23.00	33.00	111.00
347	27.50	32.00	....	....	24.00	33.50–33.83	130.00
405	21.25	27.75	....	....	....	....	....
410	20.75	27.25	....	....	....	....	....
Nickel	33.55	45.15	41.00	54.00	....	....	....
Inconel	41.23	54.18	....	....	....	....	165.00
Monel	34.93	46.28	....	....	....	....	....
Copper*	....	....	23.70†	29.65‡	....	....	....

* Deoxidized, † 20.20c for hot-rolled, ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, Inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa., S13. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
- ½-in. & smaller diam. 15
- ⅝-in. & ⅝-in. 18.5
- ¾-in. and larger ... 17.5

Longer than 6 in.:
- All diams. 14

Lag bolts, all diams.:
- 6 in. and shorter ... 23
- over 6 in. long 21

Ribbed Necked Carriage 18.5
Blank 34
Plow 34
Step, Elevator, Tap and Sleigh Shoe 21
Tire bolts 12
Boiler & Fitting-Up Bolts 31

NUTS

H.P. & C.P. Square:	Reg. Hvy.
½-in. & smaler	15 15
⅝-in. & ⅝-in..	12 6.5
¾-in.-1½-in. ..	9 1
1⅝-in. & larger	7.5 1
H.P. Hex.:	
½-in. & smaller	26 22
⅝-in. & ⅝-in..	16.5 6.5
¾-in.-1½-in. ..	12 2
1⅝-in. & larger	8.5 2
C.P. Hex.:	
½-in. & smaller	26 22
⅝-in. & ⅝-in..	23 17.5
¾-in. & 1½-in.	19.5 12
1⅝-in. & larger	12 6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaler..	35	28.5
⅝-in. & ⅝-in. ..	29.5	22
¾-in.-1½-in.	24	15
1⅝-in. & larger..	13	8.5
		Light
⅛-in. & smaller		35
½-in. to ⅝-in.		28.5
¾-in. to 1½-in.		26

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish .....48 & 10
Plated finishes ....31 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged: per cent off list)

6 in. or shorter:
- ⅝-in. & smaller 42
- ¾-in. through 1 in.. 34

Longer than 6 in.:
- ⅝-in. & smaller ... 26
- ¾-in. through 1 in... 4

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter 38
1 in. and smaller diam. x over 6 in. 26

HEADLESS SET SCREWS

(Packaged: per cent off list)

No. 10 and smaller ... 35
¼-in. diam. & larger.. 16
N.F. thread, all diams. 10

RIVETS

F.o.b. midwestern plants
Structural ½-in., larger 7.85c
⅞-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers..List to list-plus $1

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 70%, $43; 60%, $40.

Imported, net ton, duty paid, metallurgical grade, $33-$35.

ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plant)

GRAPHITE

Inches Diam.	Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95

CARBON

35,40	110	8.03
30	65,84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03

STAINLESS STEEL

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	41.00	34.00	31.25
302...	41.25	36.75	31.50
303...	43.25	40.25	34.00
304...	43.25	38.75	33.00
309...	56.00	55.00	44.75
316...	57.00	59.00	49.25
321...	49.25	48.25	37.00
347...	53.75	52.25	41.50
410...	36.50	30.50	25.75
416...	37.00	37.00	26.25
420...	44.00	47.00	31.25
430...	39.00	31.00	26.25
501...	27.50	26.00	14.25
502...	28.50	27.00	15.25

Balt., Types 301-347 sheet, except 303 and 309 E2.

Brackenridge, Pa., Sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Massillon, O., all items, R2.

McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.

McKeesport, Pa., bars, sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Muncie, Ind., wire I-7 quotes types 302, 304, 430.

Pittsburgh, sheets C18.

Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.

Sharon, Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.

Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.

Youngstown, strip except Types 303, 309, 316, 416 501 and 502 and 34.25c on Type 301 C8.

COAL CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 30.00-35.00
Toluol, one deg...26.00-33.00
Industrial xylol...25.00-33.50

Per ton bulk ovens
Sulphate of ammonia..$32-$45

Cents per pound, ovens
Phenol. 40 (carlots, non-returnable drums) ..17.25

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

Sponge iron Cents
98+% Fe, carlots.. 17.00
Swedish, c.l.f. New York, in bags..8.85-9.95

Electrolytic iron:
- Annealed, 99.5% Fe, 42.50
- Unannealed 99 + % Fe) 36.50
- Unannealed, 99 + % Fe (minus 325 mesh) 53.50

Powder Flakes 48.50

Carbonyl Iron:
- 97.9-99.8% size 5 to 10 microns..83.00-148.00

Aluminum:
- Carlots, freight allowed 29.50
- Atomized, 500 lb drums, freight allowed 32.50

Antimony 75.85
Brass, 20-ton lots..30.00-33.25
Bronze, 10-ton lots 51.25-60.00
Phosphor - Copper, 20-ton lots 50.00

Copper:
- Electrolytic 37.25
- Reduced 33.75

Lead 26.30
Magnesium 75.00-85.00

Manganese:
- Minus 100-mesh ... 57.00
- Minus 35 mesh 52.00
- Minus 200 mesh 62.00

Nickel unannealed ... 86.00
Nickel-Silver 5-ton lots 45.00
Silicon 38.50
Solder (plus cost of metal) 8.50
Stainless Steel, 302 ... 83.00
Zinc, 10-ton lots..25.00-32.50

Tungsten Dollars
Melting grade, 99% 60 to 200 mesh:
- 1000 lb and over .. 6.00
- Less than 1000 lb.. 6.15

98.8% minus 65 mesh:
- 1000 lb and over .. 4.15
- Less than 1000 lb.. 4.25

Molybdenum:
- 99.9%, minus 200 mesh 3.24

Chromium, electrolytic 99% Cr. min. 3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvll.fur. .$14.50-15.00
Connellsvll.fdy. ..17.00-18.00
New River foundry ...21.30
Wise county, foundry..15.95
Wise county, furnace..15.20

OVEN FOUNDRY COKE

Kearney, N. J. ovens..$22.75
Everett, Mass., ovens
- New England, del. *24.80
- Chicago ovens 23.00
- Chicago, del. 24.50

Terre Haute, ovens 22.50
Milwaukee, ovens 23.75
Indianapolis, ovens ...22.75
- Chicago, del. 26.42
- Cincinnati, del. 25.85
- Detroit, del. 26.85

Ironton, O., ovens 22.50
- Cincinnati, del. 25.12

Painesville, O., ovens..24.00
- Cleveland, del. 25.82

Erie, Pa., ovens 23.50
Birmingham, ovens.....20.30
- Birmingham, del. 21.60

Philadelphia, ovens ...22.70
NevilleIsland,Pa.,ovens 23.00
Swedeland, Pa., ovens 22.60
St. Louis, ovens
- St. Louis, del. 25.40

Portsmouth, O., ovens 22.50
- Cincinnati, del. 25.12

Detroit, ovens 24.00
- Detroit, del. 25.00
- Buffalo, del. 26.39
- Flint, del. 26.59
- Pontiac, del. 25.47
- Saginaw, del. 26.92

* Or within $4.15 freight zone from works.

Let's Get in ALL the SCRAP

If you are not equipped to bale your sheet metal scrap, there are TWO WAYS you can help to assure an adequate supply of scrap metal *now* and in the years ahead:

1. FOR THE PRESENT . . .

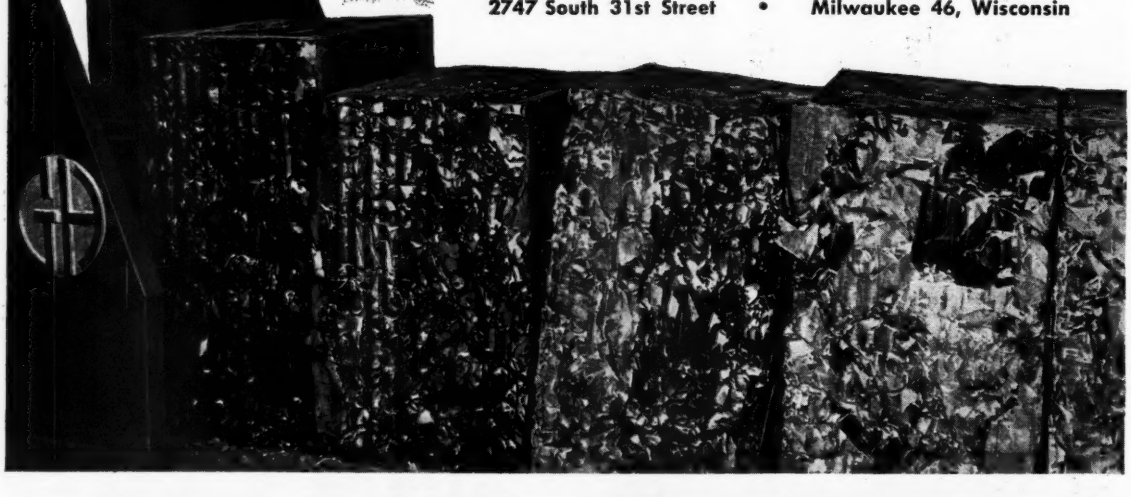
Make arrangements with a responsible Scrap Metal Dealer who is equipped to bale your Sheet Metal Scrap and ship it to Mills, Smelters and Foundries for the *Immediate* Needs of Military and Civilian Production.

2. FOR THE FUTURE . . .

Plan *now* to *integrate your plant for the orderly*, economical and profitable reclamation of your sheet metal scrap. This can be accomplished by building your Scrap Salvaging Program around the right type and size of baling equipment.

Galland-Henning offers you *competent counsel* on your Scrap Metal Baling Operations based on many years experience in the design, construction and installation of Scrap Metal Baling Presses for every industrial need.

GALLAND-HENNING MFG. CO.
2747 South 31st Street • Milwaukee 46, Wisconsin



GALLAND-HENNING
SCRAP METAL BALING PRESSES

A 7126-1P

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, for delivery within switching limits, subject to extras.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140‡§		Carbon	Floor
New York (city)	6.39	7.11	8.55	7.05	...	6.49	7.29	9.28	6.37	6.74	7.98
JerseyCity(c'try)	6.10	6.91	8.25	6.75	...	6.19	6.99	10.48	6.07	6.44	7.68
Boston (city) ..	6.40	7.18	8.59	6.35	...	6.25	6.81	10.80	6.40	6.60	7.84
Boston (c'try) .	6.20	6.98	8.39	6.15	...	6.05	6.61	10.60	6.20	6.40	7.64
Phila. (city) ..	6.04	6.97	8.35	6.60	7.11	6.29	7.16	10.48	6.10	6.38	7.29
Phila. (c'try) .	5.79	6.72	8.10	6.35	6.86	6.04	6.91	10.23	5.85	6.13	7.04
Balt. (city) ...	5.74	7.00	8.40	6.23	...	6.21	6.83	...	6.33	6.33	7.57
Balt. (c'try) ..	5.54	6.80	8.20	6.03	...	6.01	6.63	...	6.13	6.13	7.37
Norfolk, Va. ..	6.78	...	...	...	...	6.04	7.30	...	6.30	6.30	7.15
Richmond, Va..	5.74	6.57	8.38	6.14	...	5.91	6.59	...	6.72	6.86	8.00
Wash. (w'hse) .	6.05	7.26	8.49	6.50	...	6.50	7.26	...	6.60	6.65	7.86
Buffalo (del.)..	5.74	6.52	8.43	6.30	...	5.72	6.65	10.68††	6.02	6.18	7.55
Buffalo (w'hse).	5.54	6.32	8.23	6.10	...	5.52	6.45	10.48††	5.82	5.98	7.35
Pitts. (w'hse) ..	5.50	6.32	7.85	5.59	6.90	5.45	6.15	10.30††	5.65	5.65	6.89
Detroit (w'hse).	5.76	6.50	8.47	6.15	7.15	5.74	6.64	10.45††	6.09	6.14	7.21
Cleveland (del.)	5.74	6.52	8.16	5.85	7.14	5.81	6.25	8.91	6.15	6.02	7.39
Cleve. (w'hse) .	5.54	6.32	7.96	5.65	6.94	5.61	6.15	8.71	5.95	5.82	7.19
Cincin. (w'hse).	5.79	6.03	8.24	5.72	...	5.70	6.59	10.44††	6.04	6.09	7.23
Chicago (city) .	5.74	6.52	8.05	5.69	...	5.67	6.25	10.30††	5.85	5.85	7.09
Chicago (w'hse)	5.54	6.32	7.85	5.49	...	5.47	6.05	10.10††	5.65	5.65	6.89
Milwau. (city) .	5.90	...	8.21	5.85	...	5.83	6.51	10.46††	6.01	6.01	7.25
Milwau. (c'try)	5.70	...	8.01	5.65	...	5.63	6.31	10.26††	5.81	5.81	7.05
St. Louis (del.)	6.02	6.80	8.33	5.97	...	5.95	6.63	10.58††	6.22	6.22	7.46
St. L. (w'hse) .	5.82	6.60	8.13	5.77	...	5.75	6.43	10.38††	6.02	6.02	7.26
Kans. City(city)	6.40	7.20	8.40	6.35	...	6.35	7.20	...	6.50	6.60	7.80
Kans.Cty(w'hse)	6.20	7.00	8.20	6.15	...	6.15	7.00	...	6.30	6.40	7.60
Birm'hm (city).	5.75	6.55	6.90[2]	5.70	...	5.70	7.53	...	5.85	6.10	8.23
Birm'hm(w'hse)	5.60	6.40	6.75[2]	5.55	...	5.55	7.53	...	5.70	5.95	8.23
Los Ang. (city).	6.50	8.10[3]	9.05	6.60	10.65	6.45	8.35	11.50††	6.50	6.50	8.75
L. A. (w'hse)..	6.30	7.90[3]	8.85	6.40	10.45	6.25	8.15	11.30††	6.30	6.30	8.55
Seattle-Tacoma.	7.01	8.64	9.55	7.40	...	6.70	8.80	10.35	6.70	6.78	8.73
San Francisco..	6.50	7.88[3]	9.25[3]	6.60	...	6.45	8.20	11.15	6.25	6.50	8.50

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; ** 16 gauge; †† as annealed; §§ 15 gage. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [4]—3500 lb and over; [5]—1000 to 1999 lb.

Ores

Lake Superior Iron Ore

(1951 contract prices; 1952 prices not established)

Gross ton, 51½% (natural), lower lake ports. After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in applicable lake vessel rates, upper lake rail, freights, dock handling charges and taxes thereon.

Old range bessemer	$8.70
Old range nonbessemer	8.55
Mesabi bessemer	8.45
Mesabi nonbessemer	8.30
High phosphorus	8.30

Eastern Local Ore

Cents per unit del., E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

Foreign Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	$20.00-24.00
North African hematites (spot)	26.00-28.00
Brazilian iron ore, 68-69% (spot)	30.00-31.00

Tungsten Ore

Net ton unit, duty paid	
Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-$1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 85c-87c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$39.00-42.00
48% 3:1	44.00-45.00
48% no ratio	30.00-32.00
South African Transvaal	
44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00
Brazilian	
44% 2.5:1 lump	nom.
Rhodesian	
45% no ratio	$29.00
48% no ratio	31.50-32.00
48% 3:1 lump	50.00-51.00
Domestic—rail nearest seller	
48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb, molybdenum content, mines	$1.00

REFRACTORIES

(Ceiling prices, effective Feb. 12, 1952, per 1000 units)

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $85; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lochhaven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $94.60; Salina, O., $99.60; Niles, O., $104; Los Angeles, Pittsburg, Calif., $126.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $94.60; Hays, Pa., $100.10; Niles, O., $102; E. Chicago, Ind., Joliet, Rockdale, Ill., $104.50; Cutler, Utah, $111; Los Angeles, $117.

Insulating Fire Brick

2300° *F:* Massillon, O., $170; Clearfield, Pa., $171; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $178.

Ladle Brick

Dry Pressed: Bessemer, Ala., $61.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $66; Mexico, Mo., $70; Clearfield, Pa., Portsmouth, O., $79.20; Perla, Ark., $88; Los Angeles, $105; Pittsburg, Calif., $106.

Sleeves

Reesdale, Pa., $121; Johnstown, Pa., $121.30; Clearfield, Pa., $128.70; St. Louis, $131.45; Athens, Tex., $134.20.

Nozzles

Reesdale, Pa., $193.60; Johnstown, Pa., $198.55; Clearfield, Pa., $209; St. Louis, $213.95; Athens, Tex., $214.50.

Runners

Reesdale, Pa., $150.70; Johnstown, Pa., $154; Clearfield, Pa., $160; St. Louis, $162.25; Athens, Tex., $166.10.

High-Alumina Brick

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $158.40; Danville, Ill., $161.40.
60 *Per cent:* St. Louis, Mexico, Vandalia, Mo., $200.20; Danville, Ill., $203.20.
70 *Per cent:* St. Louis, Mexico, Vandalia, Mo., $233.20; Danville, Ill., $236.20; Clearfield, Pa., $240.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 10.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot add 0.25c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump, bulk 7.0c per lb of alloy, c.l. packed 7.75c, ton lot 8.5c, less ton 9.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton 16.0c, less ton 16.9c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.95c per lb of briquet, c.l. packaged 11.75c, ton lot 12.55c, less ton 13.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 11.15c, per lb of briquet, c.l. packed 11.95c, ton lot 12.75c, less ton 13.65c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size — weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet, c.l. packed 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c.

(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c, c.l. packed 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

NOTE: For current quotations on manganese, titanium and "other" ferroalloys, see page 187, May 5 issue; for chromium, silicon, vanadium, boron, tungsten alloys, page 149, Apr. 21 issue.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP COMPOSITE

May 8	$43.00
May 1	43.00
Apr., 1952	43.00
May, 1951	44.00
May, 1947	29.75

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Basing Point	Grade 1 No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grades

2. No. 1 Busheling	Base
3. No. 1 Heavy Melting	—$1.00
4. No. 2 Heavy Melting	— 1.00
5. No. 2 Bundles	— 1.00
6. Machine Shop Turnings	—10.00
7. Mixed Borings and Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00

Cut Structurals & Plate:

16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base

Foundry, Steel:

20. 2 feet and under	Base
21. 1 foot and under	+ 2.00
22. Springs and Crankshafts	+ 1.00
23 Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00
25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00
31. Old Tin & Terne Plated Bundles	—10.00

Unprepared Grades

When compressed constitutes:

32. No. 1 Bundles	— 6.00
33. No. 2 Bundles	— 9.00
34. Other than material suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for Grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries; or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purpose.

Special Pricing Provisions

(1) Sellers of Grades 26 and 27 may make an extra charge of $1.50 per ton for loading in box cars, or 75 cents per ton for covering gondola cars with a weather-resistant covering.

(2) Ceiling price of pit scrap, ladle scrap, salamander scrap, skulls skimmings or scrap recovered from slag dumps and prepared to charging box size, shall be computed by deducting from the price of No. 1 heavy melting steel of dealer and industrial origin, the following amounts: Where iron content is 85% and over, $8; 75% and over, $10; less than 75%, $12.

(3) Ceiling price of any inferior grade of scrap not listed shall not exceed the price of No. 1 bundles less $15.00.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelseats.	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel and uncut wheelcenters	— 6.00
9. Uncut Frogs, Switches.	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural, Wrought Iron and/or/steel, uncut	— 6.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
Bolsters & Side Frames:	
22. Uncut	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3 oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00
31. Fireboxes	— 8.00
32. Boilers	— 6.00
33. No. 2 Sheet Scrap	—13.00
34. Carsides, Doors, Car Ends, cut apart	— 6.00
35. Unassorted Iron & Steel	— 6.00
36. Unprepared scrap, not suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Price established for Grade 15 may be charged only when purchased and sold for rerolling uses; otherwise, ceiling shall not exceed that for Grade 14.

(2) Price established for Grade 30 may be charged only when sold to a producer of wrought iron; otherwise, ceiling shall not exceed that for No. 1 heavy melting steel.

(3) Price for Grade 25 may be charged only when sold for rerolling and forging purposes; otherwise, ceiling shall not exceed that for base grade (No. 1).

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.
(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 5, $8.
(3) For crushing Grade No. 6, $3. For preparing into:
(4) Grade No. 25, $6.
(5) Grade No. 19, $6.
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.
(7) Grade No. 17 or No. 21, $11.
(8) Grade No. 18, $12.
(9) For hydraulically compressing Grade No. 15, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6.

For preparing into:

(3) Grade No. 16, $4.
(4) Grade No. 17, $5.
(5) Grade No. 18, $7.
(6) Grade No. 21, $4.
(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 11, $7.
(3) For preparing Grade No. 3 into Grade No. 1, $4.

Premium for Alloy Content

No premium may be charged for alloy content except: $1.25 per ton for each 0.25% of nickel where scrap contains not less than 1% and not over 5.25% nickel; $2 per ton for scrap containing not less than 0.15 per cent molybdenum and $3 for scrap containing not less than 0.65% molybdenum; for scrap containing not less than 10% manganese, $4 for scrap in sizes larger than 12 x 24 x 8 in., and $14 for scrap cut in that size or smaller (applicable only if scrap is sold for electric furnace uses or on NPA allocation); $1 for scrap conforming to SAE 52100.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:

1. No. 1 (Cupola)	$49.00
2. No. 2 (Charging Box)	47.00
3. No. 3 (Hvy. Breakable)	45.00
4. No. 4 (Burnt Cast)	41.00
5. Cast Iron Brake Shoes	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop Broken Machinery.	52.00

Restrictions on Use

(1) Ceiling shipping point price which a basic open-hearth consumer may pay for No. 1 cast iron, clean auto cast, malleable or drop broken machinery cast shall be ceiling price for No. 2 charging box cast.

OPEN MARKET PRICES CAST SCRAP

Birmingham
(Delivered)

No. 1 cupola cast	$42.00-43.00
Stove plate	38.00-39.00
Charging box cast	39.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston
(F.o.b. shipping point)

No. 1 cupola cast	40.00*
No. 1 machinery cast	45.00
Unstripped motor blocks	30.00

* Delivered.

Buffalo
(Delivered)

No. 1 cupola cast	45.00

Chicago
(Delivered)

No. 1 cupola cast	45.00-49.00
Charging box cast	42.00
Heavy breakable	40.00
Burnt cast	40.00
Cast iron brake shoes	41.00
Stove plate	42.00
Unstripped motor blocks	35.00
Malleable	55.00
Drop broken machinery	52.00

Cleveland
(Delivered)

No. 1 cupola cast	44.00

Detroit
(Brokers' buying prices; f.o.b. shipping point)

No. 1 cupola cast	47.00
Heavy breakable	42.00
Clean auto cast	49.00-50.00
Unstripped motor blocks	38.00
Drop broken machinery.	49.00-50.00

New York
(F.o.b. shipping point)

Cupola cast	42.00-43.00
Unstripped motor blocks	35.00

Philadelphia
(Delivered)

No. 1 cupola cast	43.00-44.00
Unstripped motor blocks	40.00

Pittsburgh
(Delivered)

No. 1 cupola cast	46.00
Heavy breakable	45.00
Charging box cast	47.00

San Francisco
(Delivered)

No. 1 cupola cast	42.00

St. Louis
(Delivered)

No. 1 cupola	45.00
Stove plate	39.00
Unstripped motor blocks	35.00

HAMILTON, ONT.
(Delivered Prices)

Heavy Melt	$35.00
No. 1 Bundles	35.00
No. 2 Bundles	35.00
Mechanical Bundles	31.50
Mixed Steel Scrap	31.00
Mixed Borings, Turnings	32.00
Rails, Remelting	35.00
Rails, Rerolling	38.00
Busheling	29.50
Bushelings new factory:	
Prep'd	33.00
Unprep'd	31.00
Short Steel Turnings	32.00
Cast Iron Grades*	
No. 1 Machinery Cast	50.00

* F.O.B. shipping point.

SCRAP

for your every requirement

LURIA BROTHERS AND COMPANY, INC.

CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP

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HOUSTON, TEXAS
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PITTSBURGH, PA.
Oliver Building

BOSTON, MASS.
Statler Building

CLEVELAND, OHIO
1022 Midland Bldg.

LEBANON, PENNA.
Luria Building

PUEBLO, COLORADO
334 Colorado Bldg.

BUFFALO, N. Y.
Genesee Building

DETROIT, MICHIGAN
2011 Book Building

NEW YORK, N. Y.
100 Park Avenue

READING, PENNA.
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ST. LOUIS, MISSOURI
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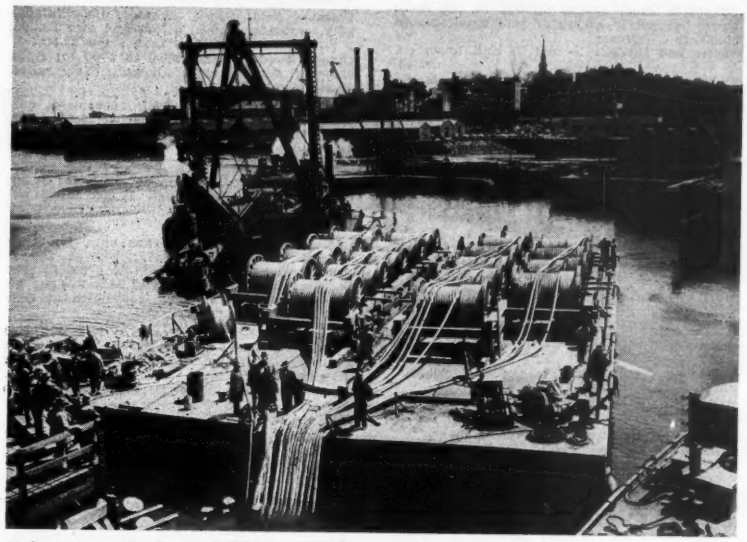
The Metal Market



Submarine telephone cables are unreeled—18 at a time—from a scow crossing the Charles river in Boston. The New England Telephone & Telegraph Co. cables hold 34,000 wires for calls to North Shore and northern New England. Submarine cables generally are constructed of rubber-insulated copper wires enclosed in a lead sheath, wrapped in asphalted jute, armored against crushing and abrasion by spiral-wound steel wire and coated with asphalt compound

Military use and stockpile needs are still dominant factors in future metals supply. Search for strategic materials abroad continues. Hardship allotments are substantial

YOUR CHANCES of getting a better break in metals allowances as the year progresses depend on what metal you need. Generalities are no longer effective in surveying the outlook for metals.

A myriad of factors must be considered in appraising each metal. Among them are production expansions, price, defense uses, consumer demand, strike possibilities, and even international trade agreements. Defense uses, of course, dominate the picture.

Lion's Share—Military take this year will include 40 per cent of all aluminum, one-third of all copper and 20 per cent of all steel says DPA's Manly Fleischmann. Other military requirements: Nickel, 70 per cent; cobalt, 73 per cent; magnesium, 55 per cent.

On top of these current needs, the government will draw metals into its raw materials stockpile, now only one-third of the way filled.

Tapping Resources — There's more production coming to offset the increased use, though. In addition to those programs already underway, some 80 projects for exploration, development and procurement of strategic materials abroad are under consideration by DMPA. They include sources of nickel, copper, manganese, tungsten, cobalt, chrome, tantalite and columbite.

Tight control reins are forcing NPA to dole out substantial quantities of aluminum and copper to relieve low allotment hardship cases. More than 36 million pounds of copper was released to compensate for second-quarter hardships. No company got more than one-half of the amount recommended. Over 47 million pounds of aluminum was issued as supplementary allocations in the last six weeks. Two-thirds of the recommended amount was the maximum released.

Chile Copper Outlook Bleak

Power politics played in both the U. S. and Chilean governments keep the copper situation snarled in Chile. Greater threat than the two-week old strike was the renunciation of the trade agreement that sends 80 per cent of Chilean copper produced to the U. S. at 27½c a pound. Sale of the remaining 20 per cent of output on world markets hasn't brought in sufficient revenues since the price slide in the world market. The Chilean government says it will control all exports to fix prices at a level that will support wage increases for the striking miners. New contract price of 33½ to 35c is asked; the U. S. will have to top the old price, but wants to pay at the free exchange rate rather than the official one. The strikebound Chuquicamata and Potrellos mines alone produced 451 million pounds of copper last year.

Tin Troubles Multiply

In another South American hot spot, Bolivia, the U. S. holds the whip hand. Victor Paz Estenssoro knows a price agreement with the U. S. would be even tougher to negotiate if the tin industry were taken over abruptly. Lack of money and technical know-how could cripple output if they were.

Another Lead Price Dip?

"The price still isn't right." These words from a large user of lead typify the market reaction to successive price cuts. Consumers are betting on further drops as foreign lead is rushed into this country before import duties are reimposed. The tariff undoubtedly will go back on sometime in June. A 14-15c lead is considered logical in some circles.

Zinc on the Brink

Zinc users are also watching the price line. Fabricators are keeping stocks low and insisting on average price during month of delivery rather than ceiling when they do order. Loss of prime western orders when galvanizers were slowed by the steel strike helped bring better balance in that grade.

Nonferrous Briefs

Tungsten and molybdenum production has exceeded IMC hopes . . . Application to RFC for a $16.5 million loan to construct an aluminum sheet rolling mill was made by United Smelting & Aluminum Co., New Haven, Conn. . . . DMPA contracted with Fansteel Metallurgical Corp. to expand tantalum and columbium facilities at its North Chicago plant . . . Colonial Aluminum Smelting Corp. put its new secondary aluminum smelter into operation at Columbia, Pa. on May 1.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c, 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 19.50c; brass special 19.75c; intermediate 20.00c, East St. Louis; high grade 20.85c, delivered.

Lead: Common $16.80; chemical $16.90; corroding $16.90, St. Louis.

Primary Aluminum: 99% plus, ingots 19.00c, pigs 18.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot; Grade 1, 18.80c; grade 2, 18.60c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 44.00c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 44.50c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 56.50c; 25-lb pigs, 59.15c; "XX" nickel shot, 60.15c; "F" nickel shot or ingots, for addition to cast iron, 56.50c. Prices include import duty.

Mercury: Open market, spot, New York, $200-$204 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.56 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.55 del.; special or patented shapes $2.80.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 87.00c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $24 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective Aug. 23, 1951)

Sheet: Copper 41.63; yellow brass 38.28; commercial bronze, 95% 41.61; 90% 40.13; red brass, 85% 40.14; 80% 39.67; best quality, 39.15; nickel silver, 18%, 53.14; phosphor-bronze grade A, 5%, 61.07.

Rod: Copper, hot-rolled 37.53, cold-drawn 38.78; yellow brass free cutting, 32.63; commercial bronze 95%, 41.30; 90% 40.82; red brass 85%, 39.83; 80%, 39.36.

Seamless Tubing: Copper 41.72; yellow brass 41.29; commercial bronze, 90%, 43.79; red brass, 85%, 43.05.

Wire: Yellow brass 38.57; commercial bronze, 95%, 41.90; 90%, 41.42; red brass, 85%, 40.43; 80%, 39.96; best quality brass, 39.44.

(Base prices, effective Dec. 26, 1951)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 28.545; 30,000 lb lots, 28.67; l.c.l., 29.17. Weatherproof, 100,000 lb, 30.35; 30,000 lb, 30.60; l.c.l., 31.10. Magnet wire del., 15,000 lb or more, 34.50; l.c.l., 35.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	30.1	...	...
0.135-0.096	12-48	30.6	...	...
0.095-0.077	12-48	31.2	29.1	33.2
0.076-0.061	12-48	31.8	29.3	33.4
0.060-0.048	12-48	32.1	29.5	33.7
0.047-0.038	12-48	32.5	29.8	34.0
0.037-0.030	12-48	32.9	30.2	34.6
0.029-0.024	12-48	33.4	30.5	35.0
0.023-0.019	12-36	34.0	31.1	35.7
0.018-0.017	12-36	34.7	31.7	36.6
0.016-0.015	12-36	35.5	32.4	37.6
0.014	12-24	36.5	33.3	38.9
0.013-0.012	12-24	37.4	34.0	39.7
0.011	12-24	38.4	35.0	41.2
0.010-0.0095	12-24	39.4	36.1	42.7
0.009-0.0085	12-24	40.6	37.2	44.4
0.008-0.0075	12-24	41.9	38.4	46.1
0.007	12-18	43.3	39.7	48.2
0.006	12-18	44.8	41.0	52.8

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— R317-T4 17S-T4	R-317-T4	—Hexagonal— 17S-T4
0.125	52.0	...	...
0.156-0.0188	44.0	...	...
0.219-0.313	41.5	...	...
0.375	40.0	46.0	48.0
0.406	40.0	...	...
0.438	40.0	46.0	48.0
0.469	40.0	...	...
0.500	40.0	46.0	48.0
0.531	40.0	...	...
0.563	40.00	...	45.0
0.594	40.0	...	...
0.625	40.0	43.5	45.0
0.688	40.0	...	45.0
0.750-1.000	39.0	41.0	42.5
1.063	39.0	...	41.0
1.125-1.500	37.5	39.5	41.0
1.563	37.0	...	...
1.625	36.5	...	39.5
1.688-2.000	36.5	...	...

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $22.00 per cwt; add 50c cwt 10 sq ft to 140 sq ft. Pipe: Full coils $22.00 per cwt. Traps and bends: List prices plus 53%.

ZINC

Sheets 26.50c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 25.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 25.50c-26.50c; over 12-in., 25.50-26.50c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 77.00c. Strip, cold-rolled, 83.00c. Rods and shapes, 73.00c. Plates, 75.00c. Seamless tubes, 106.00c.

MONEL

(Base prices f.o.b. mill)

Sheets, cold-rolled 60.50c. Strip, cold-rolled 63.50c. Rods and shapes, 58.50c. Plates, 59.50c. Seamless tubes, 93.50c. Shot and blocks, 53.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb 10,000 lb and over, f.o.b. mill)

Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, 6.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads, 28.00c; 5 tons and over 28.50c; 1 to 5 tons, 29.00c; less than 1 ton 29.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 38.34c; oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, carloads, 74.50c; 10,000 to 30,000 lb. 75.50c; 3000 to 10,000 lb. 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 400 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 400 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.375; 500 to 999 lb, $1.38; 200 to 499 lb, $1.385; less than 200 lb, $1.40. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Sannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl, 98.5c; 100 lb kegs 99.5c. Freight allowed.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point, effective June 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	10.75
Phos. Bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group 1: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass, 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material.

Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

Zinc Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment) Unsweated zinc dross, 13.75c; new clippings and trimmings, 15.50c; engravers' and lithographers' plates, 15.50c; die cast slabs, min. 90% zinc, 13.75c; old zinc scrap, 12.25c; forming and stamping dies, 12.25c; new die cast scrap, 11.75c; old zinc die cast radiator grille, 11.50c; old die cast scrap, 10.50c.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper free, 10.50; high grade borings and turnings, 8.50; No. 12 piston borings and turnings, 7.50; Mixed plant scrap: Copper-free solids, 10.00; dural type, 9.00. Obsolete scrap: Pure old cable, 10.00; sheet and sheet utensils, 7.25; old castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Lead: Heavy 13.00-13.25; battery plates 8.50-8.75; linotype and stereotype 15.50-16.00; electrotype 14.00-14.50; mixed babbitt 15.50-15.75.

DAILY PRICE RECORD

1952	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
May 6-8	24.50	16.80	19.50	121.50	19.00	44.00	56.50	87.00
May 2-6	24.50	16.80	19.50	121.50	19.00	44.00	56.50	88.00
May 1	24.50	17.80	19.50	121.50	19.00	44.00	56.50	88.00
Apr. 29-30	24.50	17.80	19.50	121.50	19.00	44.00	56.50	88.00
Apr. 26-29	24.50	18.80	19.50	121.50	19.00	44.00	56.50	88.00
Apr. 1-26	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Apr. Avg.	24.50	18.723	19.50	121.50	19.00	49.077	56.50	88.00
Mar. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Feb. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Jan. Avg.	24.50	18.80	19.50	109.404	19.00	50.00	56.50	88.00
1951								
Dec. Avg.	24.50	18.80	19.50	103.00	19.00	50.00	56.50	88.00

NOTE: Copper: Electrolytic, del. Conn. Valley; **Lead,** common grade, del. St. Louis; **Zinc,** prime western, E. St. Louis; **Tin, Straits, del. New York; Aluminum** primary ingots, 99%, del; **Antimony,** bulk, f.o.b. Laredo, Tex.; **Nickel,** electrolytic cathodes, 99.9%, base sizes at refinery unpacked. **Silver,** open market, New York. Prices, cents per pound; except silver, cents per ounce.

Wire . . .

Wire Prices, Page 175

Boston—Losses in ingot tonnage due to work stoppages have been heaviest with wire mills in this district, although one producer suffered no halt in production. In view of slow buying and low mill backlogs on most products, losses will not be serious with consumers, although mills have been forced to revise some finishing schedules. In spots a few items may be delayed. Second quarter schedules filled slowly and there are still June openings on some products.

Sheets, Strip . . .

Sheet and Strip Prices, Page 173 & 174

Chicago—The regular price producers are having no trouble booking orders for hot-rolled and cold-rolled carbon sheets, one large interest already being booked full through third quarter. This high rate of bookings even surprises the sheetmakers, for they had expected an easing by third quarter. However, belief persists that the crest is past in the flurry of additional ordering of cold-rolled sheets by the automobile industry. Demand from the appliance makers continues sluggish. Galvanized sheets are in better supply because of more plentiful zinc but the entire production of such sheets is finding a ready market. The decline in appliance business has cut the need for small electric motors. As a result demand for motor grade silicon sheets is off. Requirements for silicon grades used in large motors and transformers remain.

Boston—Slightly stronger demand is apparent for cold-rolled sheets. Nickel-bearing stainless is in August-September but other flat-rolled grades are in ample supply, although nonpremium producers are booked deeper into third quarter. Cold strip is slow and is hurt by slit sheet competition. Straight chromium stainless can still be obtained for second quarter, June.

New York—Leading producers of hot and cold-rolled sheets are not only well booked into the third quarter but in some cases throughout the entire period. Loss of production due to recent labor disruptions has tightened supply.

Contracts for approximately 8500 tons of corrugated galvanized sheets recently were placed by the Corps of Engineers, St. Louis. Bulk went to the Granite City Steel Co., Granite City, Ill., about 6300 tons, the balance to Bethlehem Steel Export Corp., New York.

Pittsburgh—Due to the latest steel work stoppage, a week to ten days production was lost. Mills now see at least a month or more carryover into third quarter, and a good order book for third quarter is indicated although some producers may become slightly marginal at the tail-end of the quarter. All products are tight here except silicon electrical sheets.

Cleveland—Loss of tonnage due to the shutdown attending the recent labor disturbance will push deliveries further into the future than had been expected. Some mills were slow to get back into operation following calling off of the work stoppage. Indications are total loss of sheet tonnage stemming from the two recent operations interruptions will run to around three weeks output. This tonnage loss, along with the pickup in automotive requirements is being reflected in a noticeable tightening of flat-rolled supply, especially in the case of the large producers. Heavy order books through third quarter are assured, except for such specialties as silicon sheets, demand for which is adversely affected by the slump in consumer durable goods.

St. Louis — Principal sheetmaker here is back in production after a two-day post-strike delay due to a pipeline laying job in connection with the mill's expansion program. Consumer inventories overall are comfortable, but the picture is spotty with some users close to the danger line.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 173

Boston—Structures designed earlier of reinforced concrete to ease structural shortages are generally retained, including nurses home, Massachusetts General hospital. With more bridges out, demand for bars holds up; most distributors could use 2000 tons or more currently to fill needs. State prison, Norfolk, Mass., will take a large tonnage, one contract being active at 2000 tons. V. Barletta Co., Roslindale, is placing 3065 tons for expressway sections, Boston, although this tonnage will not be needed for one year or more. This company bid 11.00c for bars in place on 2065 tons, about one cent higher than the recent average. More bars are being bought in small lots direct by state highway departments, notably Maine and Vermont.

Steel Bars . . .

Bar Prices, Page 173

Cleveland — Production loss resulting from the recent work stoppage at mills will further intensify the shortage of bars. Producers see little prospect of any easing in supply conditions before fourth quarter, with military demands still pressing on the market. Cold-finishers are pinched for hot bar tonnage, and while the forge shops report somewhat better supplies compared with earlier in the year, they are still having trouble getting all their needs covered.

Boston—Relatively high ratio of carbon and alloy bar tonnage is going into military contracts. Considerable buying is on a fixed monthly requirement basis and orders extend well into third quarter. Only revisions or cancellations would effect volume. In the case of alloys, some mills are booking through the balance of this year for aircraft. Smaller sizes have eased. Heavier size bar supply is hardly sufficient to meet tickets.

New York—Loss of output due to strikes and slowdowns is being particularly felt in hot carbon bars because they of all the major products are in heaviest demand. However, shipments are steadily approaching the level maintained prior to the latest work stoppage.

Philadelphia—Hot carbon bar producers are turning away tonnage orders for third quarter. This is due not only to recent disruption of operations but to continued active demand.

Pittsburgh — Hot-rolled and cold-finished bars are in tightest supply of all the bar mill products here. Heavy automotive and military demands are sustaining capacity operations. Books are filled for third quarter and there will be heavy carryover from second quarter.

Chicago—Carbon bars continue in tightest supply of all steel products. This is largely because of defense needs. Comments are heard that the country's bar capacity is insufficient, that it has not kept pace with capacities for other products.

Semifinished Steel . . .

Semifinished Prices, Page 173

Pittsburgh—Steelmaking operations are slowly moving back towards a semblance of normality here, last week averaging 64 per cent of rated capacity. This was an increase of 20 points from the previous week's revised rate of 44 per cent.

Detroit—Logjam of electric furnace ingots has resulted in Ford Motor Co. putting its electric furnace operations on a five-day week.

Los Angeles—With all furnaces of western district mills cold during the strike except those of Kaiser Steel Corp. at Fontana, Calif., the percentage of ingot capacity engaged for the week ending May 12 fell to an estimated 92.6 per cent. An estimated total of 103,000 tons of ingots were lost by 10 struck western district steel mills.

Plates . . .

Plate Prices, Page 173

Philadelphia — District plate mills are back to normal operation following the labor disturbance. Actually, the disruption did not affect plants at Conshohocken, Pa., and Harrisburg, Pa.

Philadelphia Ordnance District authorized ACF-Brill Motors Co., Philadelphia, to proceed with the remanufacture of a substantial, although unstated, number of 2½ ton motor vehicles. Each army vehicle will be torn down and rebuilt to new equipment standards in a state of combat readiness.

Pittsburgh—Plate demand continues strong. Railroads and car builders account for most of the pressure. Tank manufacturers are seeking additional tonnage. Mills see a substantial carryover into third quarter with order books completely filled.

Boston—Contracts for fabrication of larger erected fuel tanks in connection with increased storage facilities by petroleum producers at several New England points are being placed. Bethlehem Steel Co. took 585 tons for tidewater tanks, Wethersfield, Conn. Navy will place large plate fabricating contracts for tanks at annexes, Portsmouth, N. H., and Newport, R. I.; Hammond Iron Works, Warren, Pa., is low, including most alternates.

New York—Tank construction is heavy, with various oil companies expanding fuel storage facilities. Outstanding is an award of 18 tanks for

Standard Oil for erection at Bayway, N. J., requiring 9260 tons of plates. Mills are getting back into full operation following the latest labor disruption.

Chicago—With plates one of the major products in tight supply, the steel strike's interruption to shipments is felt keenly in consumers' fabricating schedules. Wide and heavy plates are in more stringent supply than light and narrow plates from strip mills.

Tubular Goods . . .

Tubular Goods Prices, Page 177

Cleveland—Substantial tonnage of pipe was lost in the recent interruption of production by labor trouble and this may serve to tighten up the market at those few points which have shown signs of easing lately. Oil country pipe is sold through third quarter and there is every prospect demand from this quarter will continue strong into next year.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 177

New York—Bolt and nut demand is easing, affecting particularly light items for manufacturing assemblies, on which buyers are having little difficulty in obtaining nearby shipments. Heavier items, such as required for building construction, shipwork and the like, are moving briskly, although not in the volume of several weeks ago.

Structural Shapes . . .

Structural Shape Prices, Page 173

New York—Recent disruption of steel production by labor trouble, and uncertainties as to the early outlook in supplies are causing builders to mark time. Not only is it a question of steel supply with them, but the cost factor looms increasingly important with labor disputes affecting building either directly or indirectly.

Boston — Structural fabricating shops have more steel in yards, but bulk of the tonnage is for fabrication of specific projects with frequently 10 to 15 per cent of wanted sizes missing, handicapping shop layouts. Standard and wide-flange material is not easing to the extent expected and volume available for stock is limited. Small bridges account for 650 tons with contracts for 25,000 tons, Fitzgerald Expressway, Boston, being let. Fore river bridge, Portland, Me., 3600 tons, is due for estimates in June or July.

Philadelphia — Structural steel demand continues limited largely to highway bridge construction and government work. Industrial building is off and there is no important spurt in apartment house and commercial building. Leading shape producers are getting production back to normal following recent suspensions due to the strike.

Pittsburgh—Structural steel business continues only fair. With the week's production loss, caused by the second work stoppage and its resultant carryover into third quarter, producers see an "even-Stephen" situation by close of third quarter.

Seattle—Backwash of the latest closing of steel plants will react to the further disadvantage of fabricating plants handicapped for months past by supply shortage. Sizable tonnages are pending.

Rails, Cars . . .

Track Material Prices, Page 175

New York—Current sluggishness in freight car buying is explained by several factors. There is no car shortage now nor is one anticipated until fall when the grain movement begins. Moreover, more than 100,000 cars are on order, with some deliveries three to six months behind. Prospects are for still higher equipment costs, reflecting the probability of higher labor rates in the metalworking industries.

Pig Iron . . .

Pig Iron Prices, Page 172

Pittsburgh—Demand for merchant pig iron is static here. Foundry schedules are only fair due to cutbacks in the consumer durable castings. Most area blast furnaces are getting back into production after the second work stoppage. Only producer that continued capacity operation is the Weirton Steel Co., Weirton, W. Va., whose workers have their own independent union. Duquesne works of U. S. Steel Co. is in process of installing nine new "scrubbers" to wash blast furnace gas. The installation will greatly reduce dust content of furnace gases and also recover iron ore dust which will be subsequently processed in sintering plants and used as part of the blast furnace charge.

Cleveland — Blast furnaces here promptly resumed production upon the calling off of the steel strike. As a result nine out of the 10 stacks in the local area are operating, one furnace of the American Steel & Wire Division, U. S. Steel Co., being down for repairs. It is expected this latter furnace will resume production sometime this week. In the closing week of April, Jones & Laughlin Steel Corp. restored one blast furnace to production that had been out several weeks for relining. Despite the loss of output recently merchant sellers have not noted any increased pressure for iron.

Chicago—Demand for merchant pig iron remains steady. While there is no intense pressure for shipments, producers have no difficulty selling all they produce. Recent work stoppages in the steel industry may be felt a little later in reduced supplies of iron. Lessened pressure for iron and lower prices of cast grades of scrap have enabled foundries to get their melts back on desired ratios of iron and scrap. The business lag continues with gray iron foundries. They are operating four to five days a week. The lull in demand for gray iron castings prompted a Michigan gray iron foundry to add steel casting production to its business again. It put back into operation the steel casting equipment it had on hand since World War II, and now it is making treads for Army tanks.

Boston—No shortages of pig iron developed in this area during the period the Mystic furnace was down.

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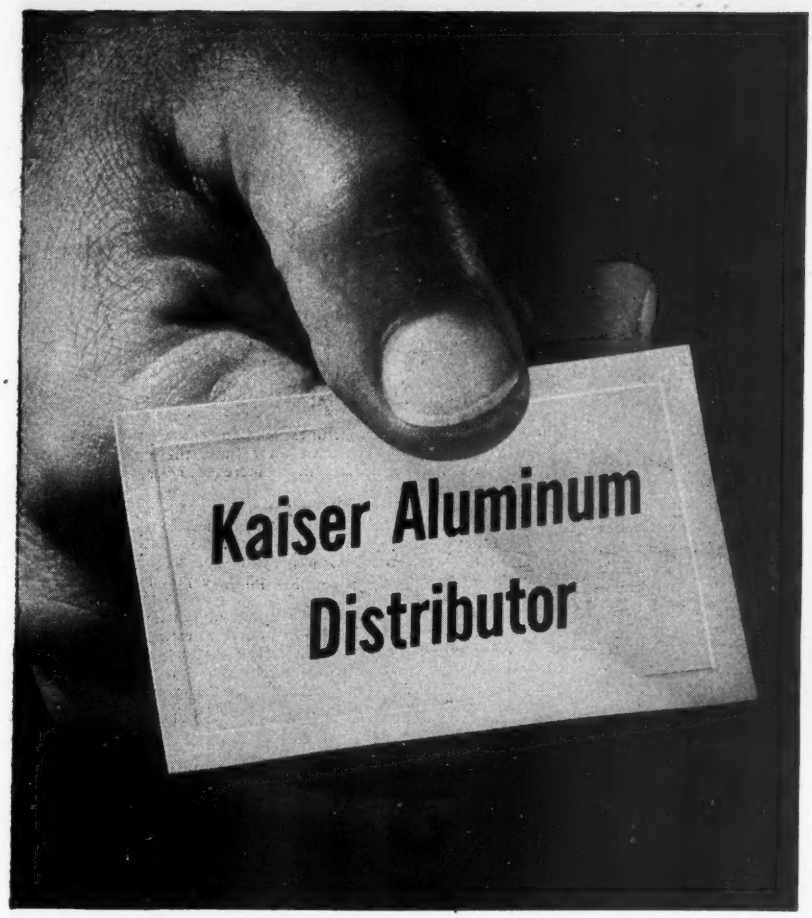

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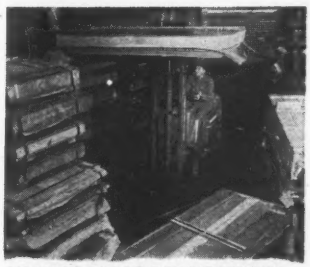

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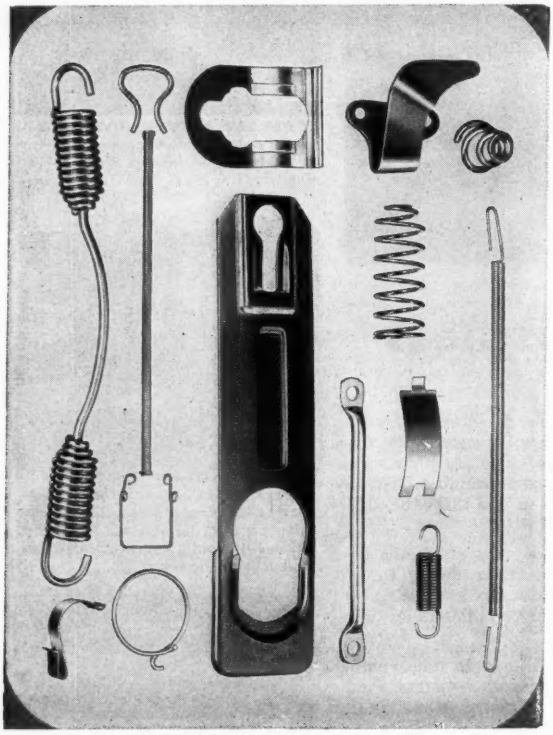

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New York—While foundry operations lag, uncertainties attending pig iron production of late have resulted in more consumer pressure for tonnage. Shops not carrying inventories to the 60-day allowable limit are endeavoring to take in more iron from furnaces.

Buffalo—Merchant pig iron production rebounded to 94 per cent of capacity following the calling off of the steel strike. One producer kept a furnace down for repairs.

Warehouse . . .

Warehouse Prices, Page 179

Cleveland—Loss of mill tonnage due to the shortlived work stoppage will adversely affect warehouse stocks over the next several months. Expectations are distributors' quotas will be cut as the mills seek to catch up with back shipments. Consequently, the steady improvement in warehouse stocks since last October may be temporarily halted, and at the very least will defer attainment of a balanced stock position. Since last fall, warehouse stocks on the average are estimated to have increased about 30 per cent. In the same period warehouse sales volume is reported to be off about 10 per cent. The government freeze of warehouse stocks, effected when the steel strike was called, was still in effect late last week but expectations were it would be lifted shortly, especially if assurance is given of no further work stoppage in the immediate future.

Chicago—Unbalance in stocks is still a top problem with warehouses, and the shutdowns in the steel industry will delay the day of complete balance. While the strike-engendered surge of consumer demand is over, the volume of warehouse business is still good. Hot-rolled and cold-finished carbon steel bars 1-in. and over are in exceptionally strong demand. Supply of bars under 1-in. is relatively better than that of the large size. Inventories of alloy bars are expected to be in balance before long. Heavy and wide plates are in strong demand but inquiries for structurals are off. Demand for cold-rolled carbon sheet is stronger than for hot-rolled. Supply of galvanized sheets is improved but demand is still good.

Philadelphia — District warehouses have little difficulty meeting demand for sheets and light plates, but they find it impossible to supply all requirements for commercial bars, shapes and heavy plates.

Pittsburgh — District warehouse operators term continuation of direction 11 to CMP Regulation 1 "ridiculous." They say it should be clarified and limited in scope. Consensus is that the direction will stay in effect until the wage-price situation is finally settled for good. Operators say some of their stocks are adequate to handle all customers, military and civilian.

Seattle—Warehouses are spreading their meager supplies among as many customers as possible.

Scrap . . .

Scrap Prices, Page 180

Washington—Reduction in freight rates on scrap between southern origin points and official territory consuming points, sought in an action brought by the Institute of Scrap Iron & Steel Inc., has been ruled upon favorably by an examiner of the Interstate Commerce Commission. Effect of the examiner's report is that current freight rates on 75,000 pound minimum carloads between southern origin points and official territory consuming points must be established on the basis of 85 per cent of 17 per cent of the K-2 first class scale, plus authorized increases under the ex parte cases. The report further specifies there must be alternating minima of 50,000 and 75,000 pounds in all instances of movement of scrap from the South to official territory. Rates now in effect between origin and destination points within southern territory are not disturbed in the examiner's report.

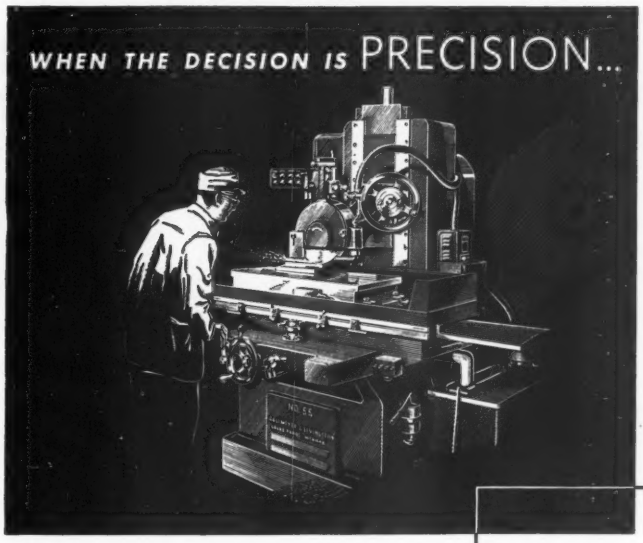
Pittsburgh — Dealers report the scrap market is fast getting back to normal following the second work stoppage by the steelworkers. Most consumers are accepting incoming shipments with exception of the district's largest producer. The market is firm except on cast grades, some of which are reported moving $3 to $4 under established ceilings by means of freight absorptions.

Philadelphia — While prime grades of steel scrap are in active demand, the overall situation in open-hearth material is fairly comfortable. One district mill recently held up shipments on No. 2 heavy melting and No. 2 bundles. District consumers of low phos are specifying lightly, though the slack is being taken up by increasing inquiry from Pittsburgh. Cast grades are moving slowly, with further easing in prices on No. 1 cupola to around $43 to $44, delivered. Other cast grades are moving so sluggishly it is difficult to establish the going market.

Boston—Steel scrap shipments are held up by one steelworks. Others are taking in tonnage against orders. Pressure is off, however, and consumers are holding closer to specifications with a shortage still apparent in top grade heavy melting steel. Cast scrap demand is at low ebb and tonnage moving in at concessions. No. 1 cupola is offered at $40 delivered, unstripped motor blocks at $30 f.o.b., and other grades are soft.

New York—Cast grades are moving sluggishly and there is not even the pressure for steel scrap there was a few weeks ago. One eastern Pennsylvania buyer has suspended shipments on secondary grades, while another has held up truck shipments on all grades. Most cast material is a drug on the market. Cupola cast is off in price and certain other grades, including unstripped motor blocks, have been offered at lower prices without attracting orders.

Buffalo—Easiest tendencies in quite some time dominated the scrap market last week. Resumption of vessel shipments, both lake and canal, added to the pressure on the market created



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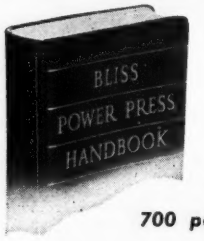

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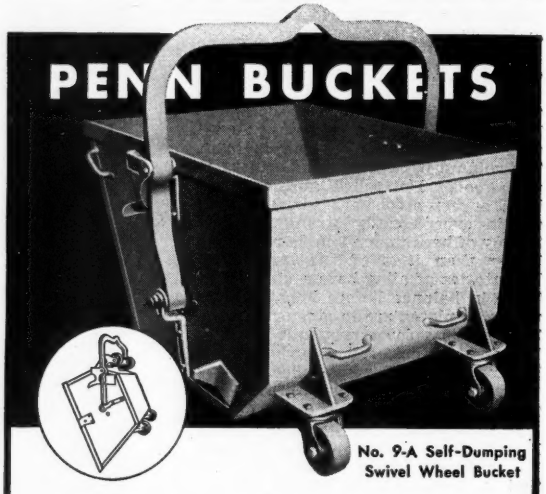

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by the large number of cars that accumulated on track during the steel strike. Cast iron prices continue to slide. Sales of cupola cast are reported within a range of $44 to $45, which is $4 to $5 under ceiling.

Cleveland—Mills again are taking in scrap following resumption of operations upon termination of the recent strike. They had held up shipments of dealer material during the shutdown period. Tone of the scrap market in general is slightly easier with steelworks, on the average, holding 30 days and better supply. As result of this improved inventory position the mills are increasingly selective in their acceptances with respect to quality. Also, they are showing less interest in high-priced demolition scrap, such as dismantled locomotives, etc. Cast scrap continues weak.

Detroit—Demand for steelmaking scrap is limp with the steel strike ended. Major concern of the trade last week was to get shipments unscrambled and to take care of orders which had been in abeyance. Ford, operating its electric furnaces five days a week, reportedly is selective of its purchased material.

Chicago—The steelworkers' strike contributed further to the lifting of pressure from demand for open-hearth and blast furnace grades of scrap. During the strike, purchased scrap accumulated, adding further to the supplies available to the mills. However, there's no price weakening on open-hearth, blast furnace and electric grades, for the high rate of steelmaking requires a big volume of scrap. Now that steel mills' scrap inventories have improved, the mills are requiring rigid adherence to specifications. Lowered operations in some industries have caused a slight reduction in the flow of industrial scrap. The dull market continues in grades used by gray iron foundries. When buyers can be found, No. 1 cupola cast brings from $45 to $49 per ton delivered, depending on quality.

St. Louis—Scrap hold-orders issued by most mills during the strike have been released and shipments are picking up. A 4000-ton order for unstripped motor blocks, largest here in several months, was placed at $35 per gross ton delivered, compared to the ceiling shipping point price of $43.

Los Angeles—Almost 8000 tons of scrap from Korean battlefields are being shipped to Aberdeen Proving Grond, Aberdeen, Md. for sale.

San Francisco—No. 2 bundles are being sold here for May delivery at $5 under ceiling, the first crack in prices of open-hearth grades of scrap in months.

Iron Ore . . .

Iron Ore Prices, Page 179

Cleveland—Shipments of iron ore from upper lake ports, including Canadian, in April totaled 6,532,096 gross tons, according to the Lake Superior Iron Ore Association. This was an increase of 320,622 tons over a year ago. Of the total movement, only 73,524 tons were shipped from Canadian ports in the month. Following table shows comparative shipments by ports:

Port	1952 April	1951 April
Escanaba	505,449	625,119
Marquette	372,647	351,232
Ashland	151,906	53,660
Superior	2,274,456	1,992,742
Duluth	1,713,675	1,466,420
Two Harbors	1,440,439	1,632,683
Michipicoten	73,524	89,618
Total	6,532,096	6,211,474

The American Great Lakes ore fleet for the 1952 season totals 274 vessels, with per trip capacity of 2,978,530 gross tons. The fleet is as follows:

Company	Number of Vessels	Capacity per trip in tons
Pittsburgh Steamship	62	785,330
Interlake Steamship	35	393,800
Hutchinson & Co.	33	323,500
Cleveland-Cliffs	19	214,000
Cleveland Cliffs Maritime Admin.	5	32,400
Bethlehem Transportation	15	169,400
Great Lakes Steamship	15	151,700
M. A. Hanna	13	149,400
Wilson Transit	10	112,900
Reiss Steamship	8	84,000
Tomlinson	8	82,300
Columbia	8	75,400
Midland	6	56,850
Jones & Laughlin	4	43,600
Nicholson Universal	3	42,000
Shenango	3	41,700
Kinsman	5	40,200
Boland & Cornelius	4	34,100
Browning Steamship	4	26,800
Browning Steamship Maritime Admin.	1	5,600
Ford	2	26,300
Gartland	3	24,950
International Harvester	2	23,000
Brown & Co.	3	21,500
Schneider	2	11,900
Jupiter	1	5,900
Total	274	2,978,530

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

6735 tons, Corps of Engineers, St. Louis, to United States Steel Export Corp., New York.

6735 tons, Corps of Engineers, St. Louis, to Bethlehem Steel Export Corp., New York.

1800 tons, maintenance hangar, Pinecastle Air Field base, Florida, to American Bridge Division, U. S. Steel Co., Pittsburgh, through Corps of Engineers, Jacksonville, Fla.

1500 tons, gates and hoists, Palisades dam, Idaho, reported to unstated Midwest fabricator.

1000 tons, five schedules, Chief Joseph dam, Washington state, to Bethlehem Pacific Coast Steel Corp., Seattle.

1000 tons, power house addition, Tompkins Cove, N. Y., through Burns & Roe Inc., New York, to Pittsburgh Bridge & Iron Works, Pittsburgh.

885 tons, reconstruction of the Hamburg-Seneca viaduct, Buffalo, through Metzger Construction Co., to Ernst Iron Works, that city.

825 tons, Corps of Engineers, St. Louis, to Bethlehem Steel Export Corp., New York.

650 tons, state bridge, Essex county, New Jersey, to Phoenix Bridge Works, Phoenixville, Pa.

625 tons, state bridge, Madison county, New York, through Prunalli Contracting Co. to Pine Brook Iron Works Co., Pine Forge, Pa.

520 tons, buildings 60 and 16, Quonset Point, R. I., to Builders Iron Works, Somerville, Mass.; Jefferson Contracting Co., Boston, general contractor.

500 tons, angles, Navy Purchasing Office, Washington, to Jones & Laughlin Steel Corp., Pittsburgh.

370 tons, addition, Jewish Center, Forest Hills, Long Island, through Joseph J. Furman, architect, New York, to Schacht Steel Construction Inc., that city.

345 tons, miscellaneous construction, Houston, Tex., through J. G. White Engineering Corp., New York, to the Mosher Steel Co., Houston.

265 tons, incinerator, Hartford, Conn., to Berlin Construction Co., Berlin, Conn.; As-

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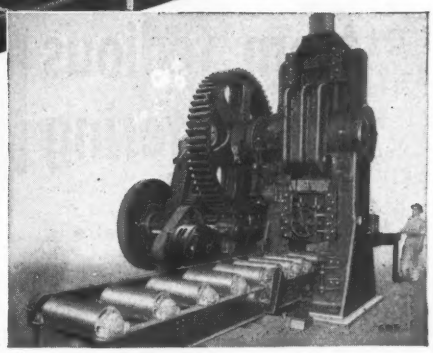

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Write for Bulletin 311

PUNCHES • SHEARS • PRESSES
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sociated Construction Co., Hartford, general contractor.

200 tons, boiler supports, Combustion Engineering Superheater Co., Highgrove, Calif., to Consolidated Steel Corp., Los Angeles.

190 tons, junior high school, Philadelphia, through McCloskey & Co., general contractor, to the Atlas Iron & Steel Co., that city.

145 tons, Damariscotta river, Lincoln-Damariscotta, Me., to Bancroft & Martin Rolling Mills Co., South Portland, Me.; W. H. Hinman, Inc., North Anson, Me., general contractor.

110 tons, Skokomish Flats transmission line, Tacoma Light Department, to Bethlehem Pacific Coast Steel Corp., Seattle, low $37,853.

100 tons, Bergen county bridge, Hackensack, N. J., through George M. Brewster & Co., to Daniel Klockner Jr., Newark, N. J.

Unstated, three spans, Forest Service road, near Hungry Horse, Montana; general contract to Hansen & Parr, Spokane, Wash., low $136,225.

Unstated, 398-ft. Chena river and three 44-ft. I-beam spans, Noyes Slough, both near Fairbanks, Alaska; general contract to Boen-Sealand Construction Co., Seattle, low $413,800.

STRUCTURAL STEEL PENDING

2600 tons, 25-story office building, Simon Bros., 477 Madison Ave., New York, pending.

2500 tons, miscellaneous buildings, Signal Corps depot, Tobyhanna, Pa., bids asked by U. S. Army District Engineers, Philadelphia, May 23.

1725 tons, state bridge work, Northampton county, Pennsylvania, Wagner Construction Co., Kingston, Pa., low on general contract.

1100 tons, plant addition, Kimball Glass Co., Millville, N. J., early action anticipated.

1500 tons, Boeing north field warehouse, Seattle; bids in May 5.

1000 tons, five spillway tainter gates and hoists; Lookout Point dam, Oregon; Northwest Marine Iron Works, Portland, Oreg., low to U. S. Engineer, Portland, $432,658.

1000 tons, estimated, additional boiler test facilities, Navy Yard, Philadelphia, bids May 29.

235 tons, sheet piling, Corps of Engineers, Milwaukee; bids in.

170 tons, Main street bridge, Fish river, Fort Kent, Me.; bids May 14, Augusta.

REINFORCING BARS . . .

REINFORCING BARS PLACED

940 tons, Navy, Washington, to Sheffield Steel Corp., Kansas City, Mo.

325 tons, state bridge, Stockbridge-West Stockbridge, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; J. F. White Contracting Co., Cambridge, Mass., general contractor.

255 tons, Navy, Washington, to Bethlehem Pacific Coast Steel Corp., San Francisco.

200 tons, Potholes East canal, Columbia Basin project, and school at Renton, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle.

165 tons, state bridge substructure, Lowell, Mass., to Concrete Steel Co., Boston; Allied Engineering Co., Roxbury, Mass., general contractor.

150 tons, Washington state highway bridge, Spokane, Wash., to Northwest Steel Rolling Mills Inc., Seattle; Henry Hagman, Cashmere, general contractor, low $176,766.

100 tons or more, pathology building, Walter Reed hospital, Washington, to Bethlehem Steel Co., Bethlehem, Pa.; Cramer & Volmerhausen Co., Washington, general contractor; 70 tons, structural steel to Barber & Ross, Washington.

REINFORCING BARS PENDING

445 tons, underpass and roadways, Charles river reservation, Boston; bids May 15, contract 734, Metropolitan District Commission, Boston.

185 tons, two-span rigid frame bridge, Hopkinton, R. I.; General Engineering & Contracting Co., Providence, low.

172 tons, Washington state highway projects; bids in May 6.

100 tons, highway grade separation, Richmond, R. I.; General Engineering & Contracting Co., Providence, low.

PLATES . . .

PLATES PLACED

9260 tons, 18 Standard Oil tanks, Bayway, N. J., with 11, requiring 5660 tons, going to the Hammond Iron Works, Warren, Pa., and 7, requiring 3600 tons, to the Graver Tank & Mfg. Co. Inc., East Chicago, Ind.

6500 tons, vertical knock-down tanks, Corps of Engineers, Philadelphia, bulk to Butler Mfg. Co., Kansas City, Mo.; Columbian Steel Tank Co., Kansas City, Mo., and American Pipe & Steel Corp., Alhambra, Calif.

585 tons, five tanks, Tidewater Associated Oil Co., Wethersfield, Conn., to Bethlehem Steel Co., Bethlehem, Pa.

500 tons, estimated, steel plate doors, Navy Purchasing Office, Washington, to Empire Steel Corp., Ft. Worth, Tex.

400 tons, two tanks, Shell Oil Co., Syracuse, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

PLATES PENDING

7500 tons, fuel storage tanks, Naval shipyards, Newport, R. I., Portsmouth, N. H., and Norfolk, Va., Navy Department, Bureau of Yards & Docks, Hammond Iron Works, Warren, Pa., low on total work, $2,877,415, and most alternates.

105 tons, North Metropolitan relief tunnel, Chelsea, Mass., S. A. Healey Co., Lackawack, N. Y., low.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Gulf, Mobile & Ohio, two 1600-horsepower diesel-electric road switching units, to the American Locomotive-General Electric Companies, Schenectady, N. Y.

LOCOMOTIVES PENDING

Chicago, Burlington & Quincy, six 2250-horsepower diesel-electric passenger locomotive units, funds for purchase authorized by board of directors.

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CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

Firth Sterling Changes Name

Name of Firth Sterling Steel & Carbide Corp., Pittsburgh, was changed to Firth Sterling Inc. K. D. Mann, president, says this change was made because the nature of Firth Sterling's business had broadened to such an extent that the former name was no longer descriptive of the range of the products now being produced by the company, including high temperature alloys, heavy metal for shielding gamma rays of atomic energy, and other items which are of a classified nature.

Square D Plans $1 Million Project

Contracts were let for a $1 million program involving construction of a research and office building for Square D. Co., Milwaukee. The project is expected to be completed in about a year. A new factory addition on N. Richards street, that city, will be completed soon. With another factory addition previously completed, this electrical controls manufacturing company's plant in Milwaukee will be about one-third larger than it was at the end of World War II.

Douglas Rehabilitating Huge Plant

Douglas Aircraft Co., El Segundo Division, will prepare the huge World War II aluminum plant located at 190th street and So. Normandie Avenue, Torrance, Calif., for production of aircraft. Under U. S. Navy contract the plane builder is to rehabilitate the buildings, acquired by the Navy under condemnation action against the Columbia-Geneva Steel Division, U. S. Steel Co.

Standard Steel Plans Laboratory

Standard Steel Corp., Los Angeles, will construct a laboratory building. The company manufactures heavy steel and alloy plate equipment for chemical, petroleum and allied industries including dryers, kilns and coolers.

Warehouse Enlarges Facilities

A $1.5 million warehouse building is being constructed in the Clearing House district, Melrose Park Section, Chicago, for Benjamin Wolff & Co. The structure will enclose 140,000 sq ft of floor area, which is considerably more than twice the size of Wolff's present building at Seely and Hoyne avenues and 59th street. In addition, 10,000 sq ft of office space is being provided in an office building connected to the main warehouse structure. The company distributes steel bars and sheets, stainless steel sheets and tin plate and is a midwest distributor of Reynolds Metals Co. aluminum products. The Wolff firm also does metal lithographing.

Grotnes Machine Occupies New Plant

Charles Grotnes Machine Works Inc. moved its offices and plant to its new building at 5454 N. Wolcott Ave., Chicago 40. Carl C. Grotnes is president and general manager.

Chain Belt Moves Into New Offices

Chain Belt Co., Milwaukee, is occupying its new administrative building at 4701 W. Greenfield Ave., that city. The building is adjacent to the firm's manufacturing facilities and houses the offices and departments of general administration, field sales administration, sales promotion and advertising, purchasing, accounting, statistical, tax, cost and castings sales.

Rio Grande Builds Branch Warehouse

Rio Grande Steel Products Co., Albuquerque, N. Mex., is erecting a building material warehouse at Farmington, N. Mex. W. S. Cole, manager of Rio Grande's fabrication department, hopes the warehouse will be finished and stocked by June 1.

Sheet Metal Fabricator Expanding

Binks Mfg. Co., Chicago, is constructing a plant for sheet metal fabrication and other operations in Franklin Park, Ill. Cost of the building is estimated at $450,000. Burke B. Roche, president, said the company has a long-range plan to eventually consolidate all its spray equipment manufacturing facilities in a single group of buildings on the Franklin Park site.

Conoflow Appoints Agent

Conoflow Corp., Philadelphia, appointed Equipment Sales Corp., Kingsport, Tenn., as its representative serving eastern and central Tennessee as well as southwestern Virginia with its pneumatic control equipment.

Diamond Alkali Changes Plans

Diamond Alkali Co., Cleveland, changed its expansion plans which will increase chlorine-producing capacity by 10 per cent at its Houston plant. This additional capacity, needed for manufacture of perchlorethylene, originally was part of the expansion program at the company's Painesville, O., plant. Diamond now plans to construct the unit at Houston because of more favorable market

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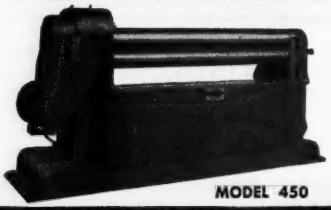

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BULLETIN 76B

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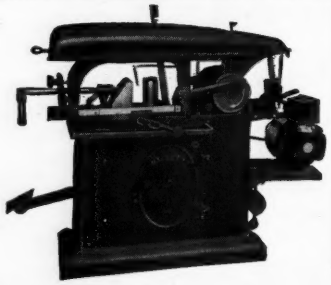

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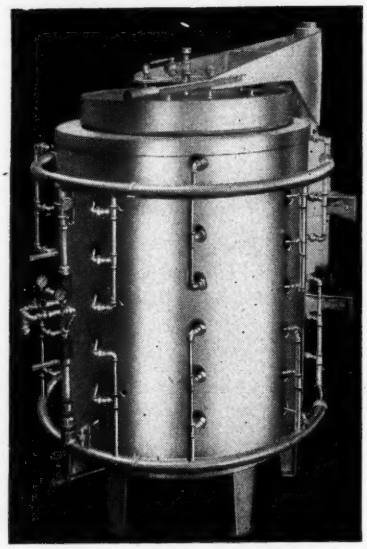

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conditions. The company has halted temporarily construction on its $12 million expansion project at Painesville so that the program can be re-evaluated in light of the Houston move.

Canada To Get Transformer Plant

A joint announcement by Frank B. Lydall, managing director, Yorkshire Electric Transformer Co. Ltd., England, and Rowland H. Stokes-Rees, president, Stokes-Rees Corp. Ltd., Montreal and Toronto, states it is proposed to build a factory in Canada for the manufacture of power transformers from 200 kva upwards. The company name will be Dominion Transformers Ltd. It is proposed to manufacture up to 10,000 kva in the first year of operation with an increasing program up to 30,000 kva over the first four to five years.

Metal Hydrides Expands

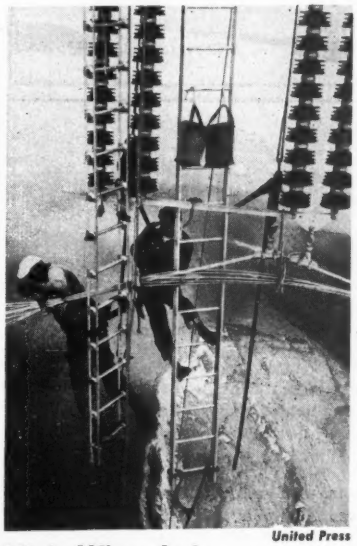
Metal Hydrides Inc., Beverly, Mass., is constructing a research and chemical hydride building as part of its current expansion program.

Continental To Build Plant

Continental Can Co. of Canada Ltd., Toronto, Ont., purchased a 40-acre site near Burnaby, B. C., for a proposed $2.5 million can plant.

Dravo Awarded Dock Contract

Coal transported in river barges direct from mines or river-rail terminals will feed the giant boilers of an $88 million generating plant being built along the Ohio river near Paducah, Ky., by Tennessee Valley Authority. The Shawnee steam plant will furnish about half the electrical power for a $500 million uranium-235 plant of the Atomic Energy Commission at Paducah. Contracts for construction of a dock and a coal barge unloading system were awarded to Dravo Corp., Pittsburgh. A total of 22 steel sheet pile cells will be constructed for the dock. Construction of the harbor and unloading facilities will start in the early summer.



United Press

High Wire Act

Four hundred feet above the Sacramento River two linemen install protective armor rod on a power cable of the 230-mile-long Shasta-Tracy transmission line. The 230,000 volt line is part of a double circuit incorporated in California's Central Valley Project

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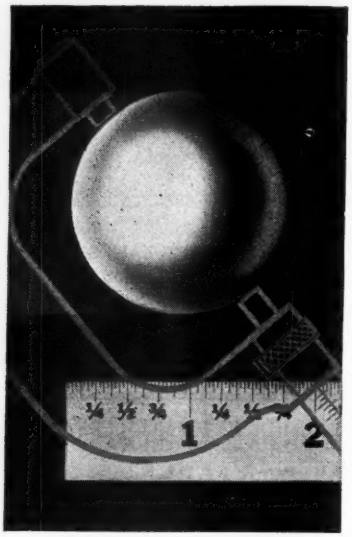

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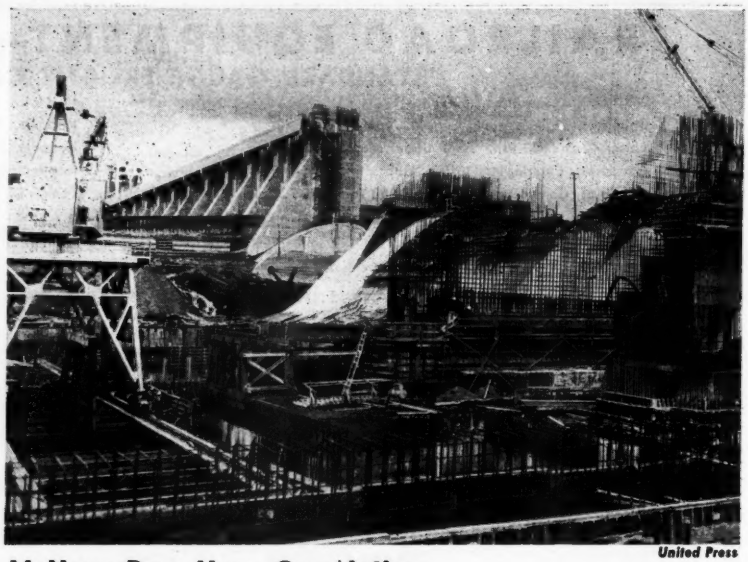


United Press

McNary Dam Near Completion

With 13 spillways already completed, McNary Dam, near Walla Walla, Wash., enters the final phases of construction. Eight more bays are to be built under a new completion contract. The dam was started three and a half years ago

Steel Firm Changes Corporate Name

Latrobe Electric Steel Co., Latrobe, Pa., changed its corporate name to Latrobe Steel Co. M. W. Saxman, president, says the change was desirable in order to more accurately and completely describe the company's products and business as they exist today. The change will in no way alter the operations or change the corporate status of the company. Latrobe is a leading producer of quality tool and die steels.

Enterprise Plans Branch Plant

Construction of a plant, in Oneonta, N. Y., for Enterprise Aluminum Co., Massillon, O., will start immediately. The structure will cost nearly $400,000. A railroad siding to serve the plant also is under construction.

Westcott Chuck Appoints Agent

Westcott Chuck Co., Oneida, N. Y., appointed William J. McSherry & Co., Chagrin Falls, O., district representative for its products in western Pennsylvania.

Firm Merges Subsidiaries

To simplify its corporate structure, a merger of four of its subsidiary companies has been effected by North American Coal Corp., Cleveland. Inland Coal & Dock Co., United Coal & Dock Co., Red Parrot Coal Co. and C. H. Mead Coal Co. were merged into one corporation to be known as North American Coal & Dock Co. The four original subsidiaries will continue to operate under their old names as divisions of North American Coal & Dock Co. Officers of the new corporation are: R. P. Botsch, chairman of the board; H. G. Schmidt, president; A. J. Ruffini, F. E. Whitaker, J. M. Kells, F. P. Towsend, R. J. Fitzgerald, E. D. McIver, J. I. Mayer Jr., vice presidents; P. A. Kleber, vice president and treasurer; N. S. Shrewsbury, secretary.

Ferguson Awarded Contract

H. K. Ferguson Co. was awarded a contract to engineer and build facilities to convert by-product hydrochloric acid to chlorine at Hercules Powder Co.'s toxaphene plant in Brunswick, Ga. The unit will consist of a compressor house, a reactor enclosure, and substantial yard equipment.

Steel-Processing Firm Expands

An additional processing plant is being erected in Detroit by Luria Engineering Corp., Bethlehem, Pa., for Philip G. Smith Co., a steel-processing concern of the former city.

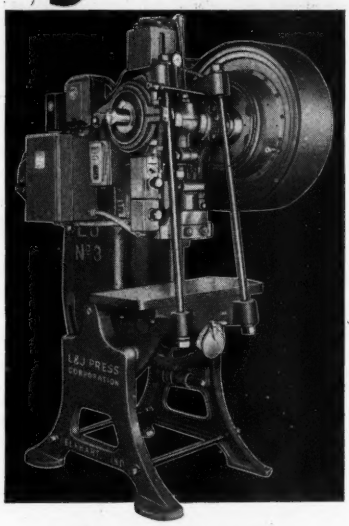
Black & Decker Plant Opens

Black & Decker Mfg. Co., Towson, Md., manufacturer of portable electric tools, is in its 100,000 square foot branch plant at Hampstead, Md.

Cleaver-Brooks Names Agent

Cleaver-Brooks Co., Milwaukee, appointed Dyke & Tutsch Co., that city, as a manufacturer's representative for the sale of Cleaver-Brooks boiler equipment.

L&J PRESSES



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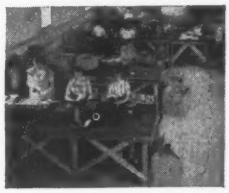

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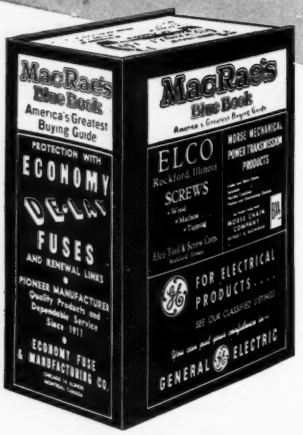

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